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Spring 1947

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A Medium of Suggestion & a Record of Progress

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WALTER S. GIFFORD, *Pres.;* CARROLL O. BICKELHAUPT, *Sec.;* DONALD R. BELCHER, *Treas.*

THE WHITE HOUSE
WASHINGTON

February 20, 1947

Dear Mrs. Grosvenor:

I am delighted to have a part in honoring the memory of your father on the one hundredth anniversary of his birth on March third.

Alexander Graham Bell is known to all of us not only as one of the world's outstanding inventors, but as a distinguished citizen who gave unstintingly of his heart and talents to the cause of a better world. The spirit of service to his fellow men motivated his entire life.

This country is great because men like your father helped make it so. I should like you to know how happy I am, in his Centennial year, to voice our nation's tribute.

Very sincerely yours,

Harry Truman

Mrs. Gilbert H. Grosvenor,
"Wild Acres,"
Bethesda 14,
Maryland.

A similar letter was sent to Mr. Bell's other daughter, Mrs. David Fairchild, in Miami

The Teacher

A tribute to Alexander Graham Bell

A. M. SULLIVAN

I

He loved the spoken word,
The beauty of the thing;
He gave the word a wing
And taught the word to fly
Till human sound is heard
Around the earth and sky.

II

He taught men better speech,
And better than his dream
He probed the airy scheme
And gave the tongue of men
A long triumphant reach
Beyond the human ken.

III

The word and then the spark,
The magnet and the sound,
And this is what he found
When he touched the distant ear:
That faith will find its mark
And ring out loud and clear.

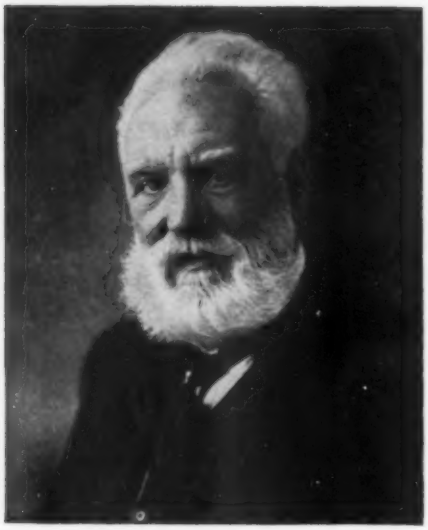
IV

Swift as a magic arrow
The first few words were sent
And the cry turned eloquent
Through fifty feet of wire,
And the words burned through its marrow
With syllables of fire.

V

He loved the human voice
And made the welkin ring
With the beauty of the thing
And the meaning of the word,
And a host of men rejoice
That they listened and they heard.

Mr. Sullivan is a former president of the Poetry Society of America, and the author of "Stars and Atoms Have No Size," "A Day in Manhattan," and other volumes



The Moffett photographic portrait of Alexander Graham Bell in later life. A large print of it occupied a place of honor above the stage during the presentation of the Telephone Hour on March 3

A Tribute Paid to
Alexander Graham Bell

We do honor tonight to the memory of a man whose imagination and genius changed fundamentally man's relationship to man. In helping the deaf, he discovered the way that has made it possible for men to hear and talk to one another around the world.

Before his invention, people could talk with one another only in the same room or nearby. Today, anybody, anywhere in this country, can talk with practically anybody anywhere else in the United States and, for that matter, with people in almost every nation in the world. Distance has been eliminated as a barrier to conversation, and the miracle of the telephone has made a single neighborhood of our entire country.

We Americans can be proud and also grateful that when Alexander Graham Bell came to the United States as a young man he was able to give full play to his creative imagination in our atmosphere of freedom. Here his invention was a seed planted in the fertile soil of a land of opportunity.

In our representative democracy and under our system of private enterprise, free from the stifling effects of a planned economy, the growth and development of the telephone has led the world. The telephone's astounding progress here is the result of individual initiative and ability. These have been given free rein over the years in the organization which bears Mr. Bell's name and which rec-

President Walter S. Gifford of the A. T. & T. Co., photographed just before the Telephone Hour went on the air. His tribute to the memory of Mr. Bell was the high point of the program

by Walter S. Gifford

during the Bell Centennial

ognizes the American ideal of respect for the individual and of equal opportunity for each to develop his talents to the fullest.

MR. BELL was a pioneer in aviation as well as the father of telephony. Great as his achievements were, it is not for them alone that he commands our deepest respect. The mainspring of his life was the desire to serve humanity. He thought of himself as a teacher of the deaf, and as long as he lived he was devoted to the cause of lightening their burden.

It was my good fortune to know him, and to gain a personal sense of how great a man he was. I first met him in 1917, when he was seventy years old. I was at once impressed by his charming personality, his wisdom, his enthusiasm, and his inquiring interest in the world about him. Yet uppermost in my memory of Mr. Bell is the recollection of his great kindliness and his concern for the welfare of others. To me, it is a happy and inspiring thing that in the character of the inventor of the telephone, we should find just those human qualities that contribute most to the character of telephone service.

HIS SPIRIT of service has lighted the way for telephone men and women everywhere, and has become a tradition with us in the Bell System. This tradition is our most appropriate memorial to the man we honor in this centennial year of his birth.

Mr. Bell and the Bell Laboratories

BEFORE there was a telephone, there was a telephone laboratory, as the present Bell Telephone Laboratories frequently point out, and the daytime ceremonies of the Bell Centennial observance were focussed in the Murray Hill, N. J., laboratories of that organization. There, on March 3, 1947, more than a score of Mr. Bell's descendants were entertained, and several took part in activities arranged to do honor to their distinguished ancestor.

Walter S. Gifford, President of the American Telephone and Telegraph Company, welcomed the guests, and introduced Dr. Oliver E. Buckley, President of the Bell Telephone Laboratories. At the conclusion of Dr. Buckley's remarks, which are given below, Mrs. Gilbert Grosvenor, daughter of Mr. Bell, unveiled a heroic bust of her father which had been executed in terra cotta by Paul Manship. The bust stands on an eight-foot mahogany pedestal in the main entrance lobby at Murray Hill.

Three Bell generations then took part in the longest land-line telephone hook-up ever established. The circuit extended from Murray Hill through New York, Miami, New Orleans, El Paso, Los Angeles, San Francisco, Seattle, Minneapolis, Chicago, Buffalo, Bangor, Boston, and again New York and back to Murray Hill. Mrs. Grosvenor and Mrs. Leonard Muller, a granddaughter of Mr. Bell, conversed over this 10,000-mile circuit from adjacent booths and Mrs. David Fairchild, his other daughter, joined in the conversation at Miami. President Truman's letter of tribute, reproduced on page 2, was read over this around-the-nation circuit. Other members of the Bell family listened through earphones and some of the younger ones took turns at the telephones.

After these events, the group toured the Laboratories, and then were Dr. Buckley's guests at luncheon. In the afternoon they gathered in the auditorium to view a premiére of the A. T. & T. Company's Bell Centennial motion picture, "Mr. Bell."

Address of Dr. Oliver E. Buckley

at the unveiling of the Paul Manship bust of Alexander Graham Bell, Murray Hill, N. J., March 3, 1947

WE HAVE ASSEMBLED here today to do honor to Alexander Graham Bell, the inventor of the telephone, who was born just one hundred years ago in Edinburgh, Scotland. Joining with us, the members of the telephone family, are members of Dr. Bell's own family, including his descendants down to the fourth generation.

As father of the telephone, Dr.

Bell has a kind of family relationship to all of us whose lives are intimately bound to the instrument which he created. All who are part of the Bell System can claim that relationship, but we who are members of Bell Telephone Laboratories have a special claim. We are truly the spiritual descendants of Dr. Bell, for it is our privilege and responsibility today to carry forward the torch of scientific inquiry which 70 years ago led him to the concept of the telephone.

THIS FOREBEAR of ours is one in whom we can take great pride, for his greatness is not alone measured by the invention of the telephone which most brought him his fame.

He was an enthusiastic teacher and made outstanding contributions to methods of teaching the deaf.

He was a great leader, as exemplified by his record as President of the National Geographic Society and his organization of the Volta Bureau.

He was a man of unusual vision, who could see far into the future, as evidenced not only by his early prediction of the extension of telephony but also by his confidence in the practical possibilities of aviation at a time when contemporary scientists were skeptical.

He was practical as well as imaginative. His facile mind led him to explore many trails but always with an eye to practical application and most often concerned with human welfare; for above all he was a great humanitarian, beloved by all who knew him.

One of the many trails along which his curiosity led him was that of practical genetics, his interest having been aroused by his observations on the hereditary aspects of congenital deafness. Attracted as he was to the study of heredity, it seems likely that Dr. Bell, if he were here today, might look on the telephone itself and Bell Telephone Laboratories as notable examples of inheritance and evolution, the modern telephone as a descendant of his own brain child and Bell Telephone Laboratories as a descendant of the attic laboratory of himself and Watson in which the telephone was born.

The unveiling. Mrs. Gilbert Grosvenor, a daughter of Alexander Graham Bell, reveals an heroic bust of her father as a young man, executed in terra cotta by Paul Manship, as President Oliver E. Buckley of Bell Telephone Laboratories and President Walter S. Gifford of the A. T. & T. Company look on

From Dr. Bell's original telephone instrument have sprung the fifty mil-

Before the sculpture stand Dr. Buckley, Mr. Gifford, Mrs. Grosvenor, and Gardiner H. Myers and Midshipman Alexander Graham Bell Grosvenor, great-grandsons of the telephone's inventor

lion or more telephones in use today. Descendants of that first telephone are to be found all over the world. There are great variations among them, but all bear evidence of their common ancestry. Growth in numbers has been paralleled in time by rapid evolution in design. The telephone has changed over the years and become progressively a better instrument as new knowledge and new methods of operation have been incorporated in it.

However, we cannot appropriately treat of telephones as individuals. A telephone instrument by itself has little value or usefulness. It is useful only when associated with another telephone and a line to connect them, and its value increases the greater the number of instruments with which it can be connected.

More striking even than the evolution of the telephone instrument itself is the evolution of telephone systems which have built for society a great network binding together telephones everywhere and making possible the rapid worldwide flow of thought. This network has become, indeed, the nervous system of modern society, quite analogous to the nervous system that serves the human body. The telephone instrument itself is merely the nerve-ending of this system. Many of its parts are hidden or buried; they are to be found in great cables carrying thousands of wires beneath city streets and in huge central office buildings that house the complex switching centers of the system.

AS THE telephone system has evolved, so has there been an evolution in the telephone laboratories which have been the main source from which improvements in telephony have come. The original Bell Telephone Laboratory with its team of two workers has grown to a great institution for research and development with a team of 6000 workers.

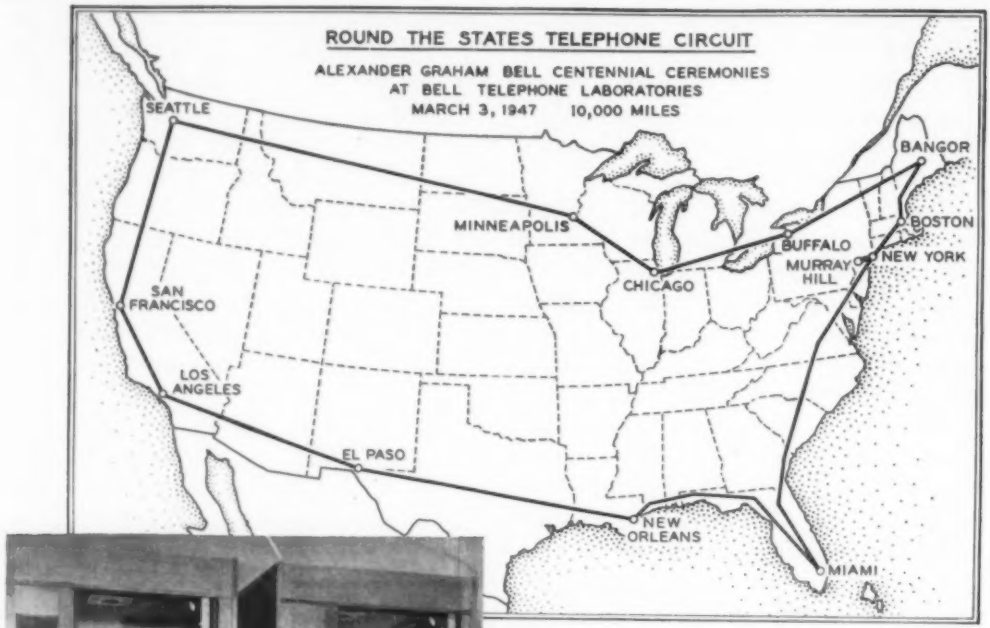
Only about 1000 of that number are located in the building where we are now assembled, and perhaps the best way to envisage the size of today's Laboratories is to look at this building and multiply it by six.

Such an institution cannot be built in a day, and this one has been the product of gradual growth as the needs for its services have expanded and the way to provide them has become evident from experience. There have been changes in form and in pattern of organization. There have been changes in methods. There have been changes in materials from which we build. There has been a rapidly expanding stream of new scientific knowledge flowing from universities and other sources of science research. But in all this welter of change there has been one steady purpose for Bell Telephone Laboratories: always it has been to apply research and invention to the extension and perfection of electrical communication, creating the best facilities for economical telephone service that scientific knowledge makes possible.

This has called for a team of many skills: scientists to unearth new knowledge; inventors to devise new methods, systems, and appliances; designers to put the products of invention into form for economical manufacture; draftsmen and technical writers to translate ideas into precise specifications; mechanics to build models so that engineers could test new products under actual conditions of use—and all the other helpers, including accountants, typists, patent attorneys, and executives who join their efforts to this common end.

THE MEMBERS of this team have been carefully selected over a long period. The team combines the judgment and knowledge gained from years of experience with the enthusiasm of young minds versed in the newest scientific knowledge. It is more than a team of great skills and

Dr. Buckley leans forward to explain to a group of Mr. Bell's great-grandchildren the workings of a model of the liquid telephone transmitter, while Mr. Gifford looks on



'Round-the-nation conversation. Mrs. Leonard Muller (left), a granddaughter of Mr. Bell, and Mrs. Gilbert Grosvenor, a daughter, conversed with each other over the circuit sketched above, as part of the centennial observances at Bell Laboratories at Murray Hill, N. J.

ability; it is the custodian of an art and of a great tradition. A sense of personal responsibility pervades the whole organization, and all of us are proud of our magnificent inheritance.

Let us imagine what would most interest Dr. Bell if he could go with us today on a tour of Bell Telephone Laboratories. He would doubtless quickly comprehend and admire the improvements in the telephone instrument itself, and would find the answers to questions that had perplexed him in the design of its predecessors.

He would, I believe, be amazed at the complexity of the devices used in the modern art of machine switching. Indeed, he would find in it one of the most intricate machines ever designed by man, yet made responsive to the control of any telephone subscriber who chooses to dial a number.

DR BELL would be impressed, I am sure, by the advances which have been made possible by electronic devices, the first of which were just coming into use in the later years of

his life. Though I doubt it would at all surprise him to find radio playing an important part in a modern telephone system, I believe that our present grouping together of great numbers of telephone conversations for simultaneous transmission over the same conductor or radio link surpasses anything he could have imagined in his lifetime.

He would be delighted, I am sure, in seeing the fundamental research work going on in the laboratory, and particularly our studies on visible speech. Here he would see the realization of the very object of one of his own researches that crystallized for him the idea of the telephone. He would see in it not only a scientific achievement but an effective tool for the teacher to use in instructing handicapped pupils to speak correctly. Indeed, if the tales I have heard of him are correct, he would probably execute an Indian war dance at this stage of his journey.

Doubtless, thoughout the whole trip he would admire the excellent facilities which his successors have at their disposal, contrasting them with the crude tools which were available to him.

BUT ONE ASPECT of Bell Telephone Laboratories would, I believe, at the end of the trip bring more favorable comment than any other, for it is so of almost every visitor and he would be more observant than most. That comment would be on the intelligence, alertness, and enthusiasm of the people working here. For he would know that it is on the personal qualities of its members, more than on anything else, that the success of a research and development group depends.

Fine buildings and good equipment are a help, good organization and leadership are important, but nothing counts so much as the presence of good men inspired by a sense of freedom in their work—a freedom that is limited only by its dedication to a high ideal of public service.

Dr. Bell would, I believe, be proud of those who have succeeded him in telephone research. The members of his family who honor us by their presence today can share that pride, as today they have the opportunity to see what has come from the laboratory their distinguished forebear started.

AS AN enduring reminder of this hundredth birthday of the inventor of the telephone, we have called on the services of the eminent sculptor Paul Manship to execute a likeness of Alexander Graham Bell as he appeared at about the time of his great invention.

On the pedestal which supports this likeness is a thought which came from the depths of Bell's own wisdom and experience. His words are simple and his imagery is homely. None the less, the faith which he expressed is dearly prized by every scientist. These few words of his will long remain an inspiration to us who work here. They read:

Leave the beaten track occasionally and dive into the woods. You will be certain to find something that you have never seen before.

Two Men and a Piece of Wire—*and Faith*

THE "TELEPHONE HOUR" radio program of March 3 took place on the hundredth anniversary of the birth of Alexander Graham Bell, and was dedicated "to his accomplishment and his vision of a greater America." Several members of the Bell family were in the studio audience as honored guests. The program occupied an hour instead of the usual 30 minutes, and Helen Traubel, soprano, and Jascha Heifetz, violinist, appeared with Donald Voorhees and the Bell Telephone Orchestra and Chorus. A "dramatic interlude," written by Norman Rosten, was presented by a cast headed by the noted actor Raymond Massey. In order to preserve something of the atmosphere of this part of the broadcast as the studio audience heard and saw it, the radio script is here given verbatim, Mr. Massey being the NARRATOR. *The Editors.*

OPERATOR 1 (FILTER)

New York calling Denver . . . calling St. Petersburg . . . Kansas City . . . Hartford (FADING) Philadelphia . . . Chicago . . .

NARRATOR

Easy, isn't it? You lift the receiver, ask for the operator . . .

OPERATOR 2 (FILTER)

Number please? One moment, please . . . (MUSIC UNDER)

NARRATOR

"One moment, please . . ." It's a matter of moments now. It's one hundred million miles of wire, with radio-telephone links overseas. It's a highly skilled organization of more than half a million men and women on the job day and night to serve you —serving America in a thousand ways, in crisis and everyday affairs.

(MUSIC HOLD)

VOICE 1 (MAN)

Watch-tower ten reporting. Hello. Brush fire a-running south by southwest. Wind up to thirty miles an hour.

VOICE 2 (WOMAN)

May I have Main 4-6000, please.

VOICE 3 (WOMAN)

Operator, please connect me with the nearest hospital.

VOICE 4 (MAN)

And say, Joe, I'd like to increase that order by twenty tons. How soon can you ship out of Chicago? Two days? Fine. (FADING) Give me a ring if there's any delay . . .

(MUSIC TO CHORD AND OUT)

NARRATOR

That's the familiar picture. That's part of our age. We're used to miracles today. But how about the birth of miracles? Mr. Shirley, would you read the opening paragraph of this sheet of paper, please?

SHIRLEY
(ANNOUNCER)

Of course. "The proprietors of the Telephone, the invention of Alexander Graham Bell, for which patents have been issued by the United States and Great Britain, are now prepared to furnish telephones for the transmission of articulate speech through instruments not more than twenty miles apart . . ." (PAUSE)

NARRATOR

It's all right—just read on, if you will.

SHIRLEY

(CLEARS HIS THROAT) "Conversation can be easily carried on after slight practice and with the occasional repetition of a word, or sentence. On first listening to the Telephone, though the sound is perfectly audible, the articulation seems to be indistinct; but after a few trials the ear becomes accustomed to the peculiar sound and finds little difficulty in understanding the words." Well!

NARRATOR

Mr. Shirley, you've just read the opening of the first Telephone advertisement, which appeared in Cambridge, Massachusetts, May, 1877, the year following Bell's first successful transmission of speech over wire. "Not more than twenty miles apart . . ." That makes us smile today, doesn't it? Always easy to look back and smile. (MUSIC COMES IN BEHIND)

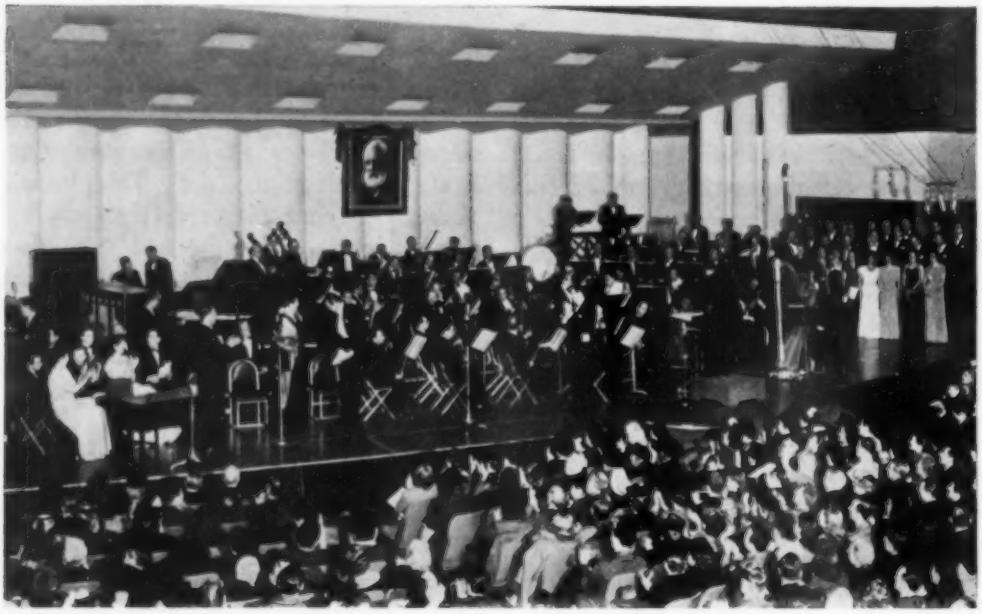
What kind of country did we have in the 70's?
She was a sprawling and still green country,
On her way to big things, finding her power,
Fifty million people then, native and immigrant
Crowding the cities and spilling over to the open west.
Colorado was a new state in the Union,
Wyoming, Idaho and Utah were just territory
Waiting for the homesteaders—there was room for awhile!
Room for the dreamers, the kind who make their life
Out of wilderness and hope—the pioneers.
Around this time they had a thing called a bicycle,
Made of wood; and P. T. Barnum was going strong;
And a steamboat paddled from New Orleans to St. Louis
In less than four days—a record, they say.

(SOUND OF OLD TYPE RAILROAD WHISTLE APPROACHING)

The Union Pacific heading for the Utah territory,
With the Central Pacific coming the other way.
And at a place called Ogden, you may remember . . .

(SOUND: HAMMER ON A SPIKE)

They drove in the Golden Spike,



The Telephone Hour was 60 minutes long on March 3. This picture was made just before the program went on the air

Tied a strip of steel together,
Linking the continent all the way!

(SOUND OF THRESHING MACHINE)

Harvester and thresher walking the prairie;
Machines take over the vast spaces.

(SOUNDS: DERRICK, RIVETING, STEEL ROLLING MILL)

New sounds for America: sounds of construction:
Iron and steel echoing across the land:
Rolling steel for the spine of a nation!

(A LOW TWANGING SOUND OF THE PLUCKED VIBRATING REED USED ON BELL'S FIRST RECEIVER)

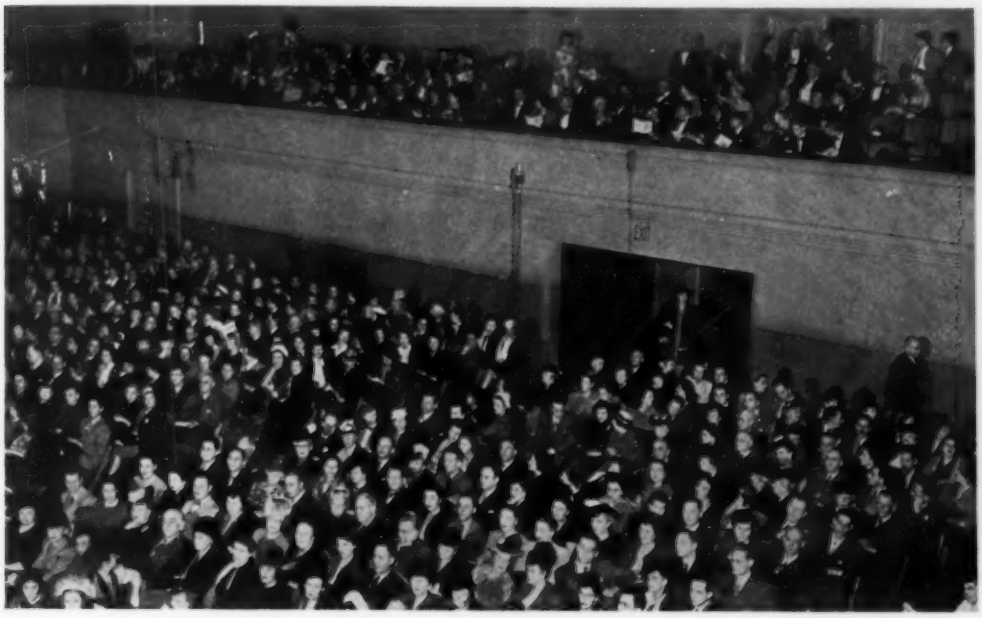
One moment, that sound . . . It almost went by.
Let's have that sound again, please.

(REPEAT THE SOUND)

A vibrating reed. A thin strip of magnetized steel
Sending tone and for the first time
Its overtone . . . faintly . . .

(SOUND: REPEAT STEADILY UNDER. MUSIC SNEAK TO SAME TUNE AND TEMPO)

Heard in the attic room of an old frame house
In Boston in the year 1875, and the man listening
Was Alexander Graham Bell. O this miracle



Specially invited guests, including members of the Bell family group, are at the right end of the balcony, in the biggest studio in Radio City

Not even to the height of a whisper,
And yet to his ear, tuned and trained,
This secret sound being sent from the next room
Had a meaning only he understood.

(MUSIC ABRUPTLY OUT)

BELL (EXCITEDLY)

Watson, where are you? Watson, are you there!

(SOUND: DOOR OPEN)

BELL

Watson . . .

WATSON

Yes, Mr. Bell? What is it?

BELL

What did you do? Don't change anything. Let me see.

WATSON

I plucked the vibrating reed . . . it seemed to stick. Like this.

(SOUND OF VIBRATING REED)

BELL

So . . . at last. This is the key, Mr. Watson. And the door we unlock next—who knows—may be the sending of human speech over a wire. It must be done. At least, we will try.

(MUSIC UNDER)

NARRATOR

Almost a year later, on March 10, 1876, Bell was at work in his room, seated near a transmitter, while Watson, his assistant, was several rooms away at the receiving end of a one-way line. It was just another day of tedious experimentation—testing, hoping, trying. As Bell leaned over the work-bench, his arm spilled some

Some of the members of the cast of the "dramatic interlude" presented during the Telephone Hour go over the script with Mr. Massey in rehearsal

battery acid on his clothes. He jumped up and called out . . .

(MUSIC OUT)

BELL

Mr. Watson, come here, I want you! (PAUSE) Hmmm. I've ruined this jacket. How did I ever . . .

(DOOR OPEN)

BELL

Yes, what is it, Mr. Watson? Have you seen a ghost?

WATSON

Mr. Bell, Mr. Bell . . . I heard every word you said—over the wire!

BELL

You . . . *heard?*

WATSON

"Mr. Watson, come here, I want you." I heard it distinctly! (PAUSE) That was the first sentence ever heard over the telephone, sir.

BELL

Not much of a sentence, was it?

(BELL LAUGHS EXCITEDLY. WATSON JOINS)

NARRATOR

Well, that's how it began. Two men and a piece of wire—and faith. Would it work? Soon this plaything, which many people called it, went into business, and the way you went about getting early telephone service was something like this . . . (MUSIC OUT)

HUBBARD

Now let's see, Mr. Emery. You have an office here in the city, but you'd like to be able to talk to your home in Somerville.

EMERY

That's right, Mr. Hubbard.

HUBBARD

You know about setting your own poles and stringing your wire—

"One moment, that sound . . ." Raymond Edward Johnson, who played the role of Bell, demonstrates to an NBC sound-effects man the twang of the vibrating reed on a model of Bell's experimental apparatus

EMERY

Guess I do. Got a stretch of poplars along the road part way. Would they do for poles?

HUBBARD

They'll do fine.

EMERY

Not so sure about stringing the wire, though.

HUBBARD

Well now, we can get it done for you, at five dollars a mile. Not counting the price of wire, that is . . . You'll need some insulators, too. Cost twenty-five cents each. After all that's set up, we leave you two telephones, price forty dollars a year, payable semi-annually in advance. We keep the line in repair free of charge.

EMERY

Meant to ask . . . Need any trainin' to run the thing?

HUBBARD

Not a bit! Nothing complicated. Just a place to listen out of, and a place to talk into. We'll do the rest.

(MUSIC UNDER)

NARRATOR

By August 1877, sixteen months after the first transmission of the human voice over wire, there were

Other members of the cast find something amusing as they rehearse their parts

Among the principals in the Bell Centennial Telephone Hour broadcast were (l. to r.): Raymond Massey, the narrator; President Walter S. Gifford of A. T. & T.; Miss Helen Traubel, soprano; and Donald Voorhees, conductor of the Bell Telephone Orchestra and Chorus

778 telephones in use. A staggering figure for the time, you can be sure! There were still the doubters and scoffers, but some said the telephone thing was here to stay! And, in 1878, the first commercial telephone switchboard was put into operation in New Haven, Connecticut, with eight lines and twenty-one subscribers. But there were problems. Like the calling apparatus. Nothing like a bell at first. Someone just tapped a pencil on the diaphragm and if someone heard it at the other end, fine. If not, well, you'd keep on trying. Then there was a "buzzer" call.

(MUSIC OUT. SOUNDS OF WATSON'S BUZZER: MUCH LIKE AN OLD RAUCOUS AUTOMOBILE HORN)

Folks didn't like that too much, especially at night. Next came the bell model with the hand crank.

(SOUND OF HAND CRANK BELL)

In the early telephone exchanges, when you'd put in a call, there was no charming young lady operator at the other end, but . . .

OPERATOR 1 (BOY)

What do *you* want!

(PLAYFUL MUSIC CHORD)

NARRATOR

Or, a bit more conversationally—

OPERATOR 2 (BOY)

Rudley Leather Shop? Line is busy. I said the line is busy. What's that? You don't believe me? Now that's too bad. Stick your head in a tar barrel.

(MUSIC: CHORD)

NARRATOR

Or, in the midst of a conversation, the boy operator at the exchange would cheerfully cut in . . .

OPERATOR 1 (BOY)

You still talking? Why don't you get off and take a deep breath? Ha, ha, ha . . .

(LAUGHTER BEHIND. MUSIC: OVER AND OUT)

OPERATOR (GIRL)

This is Central. 426? Thank you. I'll ring them for you.

NARRATOR

Yes, it wasn't long before the voice with a smile greeted the subscriber, and with it a new era of expanded service. "I believe," said Alexander Graham Bell in 1878, "that in the future wires will unite different cities, and a man in one part of the country may communicate by word of mouth with another in a distant place." And slowly it came to pass.

OPERATOR VOICES

This is Boston.
Hello Salem.
Hello Providence.
This is Detroit.
Hello New York.
Hello Chicago.
(FADING) Hello. Hello. Hello . . .

(MUSIC UNDER)

NARRATOR

The century turning, bringing new cities, and the thunder of industry. The spaces of the West being filled, the endless footsteps of migration, opening of new vistas; the railroads branch out, the roads breaking forest and desert; everywhere the tireless heart of America stirs with the energy of many peoples. And everywhere the telephone lines go forward.

OPERATOR VOICES

Hello St. Louis.
New Orleans calling Cleveland.
Hello Dallas.
Hello Denver.
(FADING) Hello. Hello. Hello . . .

NARRATOR

Wires humming between cities. The switchboards grow from a few circuits to hundreds, thousands . . . Until one day a ceremony is performed. It is January 25, 1915. Seated at a long desk, the now gray-haired Alexander Graham Bell, with a wisp of a smile—remembering the early struggles perhaps?—picks up his telephone in New York City.

(MUSIC OUT)

BELL

Ready, gentlemen?

VOICE 1

In a moment, sir.

VOICE 2

Will they hear you in San Francisco, Mr. Bell?

BELL

I believe so.

VOICE 2

But still, it's over 3,000 miles . . .

Jascha Heifetz, violinist, was a featured soloist

BELL

It can be three million. As long as the poles are standing, and the wires drawn, and the human voice can speak, why then it shall be heard.

ENGINEER

Circuit open, Mr. Bell. Go ahead.

BELL

Hello, San Francisco. (PAUSE) Mr. Watson, come here, I want you!

WATSON (FILTER)

Mr. Bell, I would be glad to oblige, but it would take at least a week.

(LIGHT LAUGHTER—MURMUR OF VOICES BEHIND)

BELL

How's your voice today, Mr. Watson?

WATSON

Pretty good.

BELL

Let's hear you sing a little song for my friends. Come on, you've done it before . . . How about "Auld Lang Syne"?

WATSON

I'll try.

(BEGINS TO SING. MUSIC TAKES THEME OVER AND DOWN BEHIND)

NARRATOR

The future throws its giant shadow; radio-telephone:
The human voice lifts across the Atlantic,
From land to sea to land—encircles the globe,
And the drama is brotherhood, man's joining.
The sound of guns, names of the past break in,
Chateau-Thierry and Belleau Woods and Soissons;
And the newer names: Guadalcanal, Tarawa, Anzio,
Utah Beach, Normandy . . . and the guns become quiet.
Again the wires and lines connecting, joining,
Binding the space between the broken cities,
Man calling man to the arts of labor and construction.
The hundred-voiced switchboards of the large cities,
The single voice of the village, each holding open
The tens of million miles of wire, touching
Homes and rooms and desks and the roaring traffic.
The speech of a nation, voices of the big and little,
The family of peoples in a house of many states,
Instantly touching . . . while men in the laboratories
Bring the cosmic secrets, large as the hemispheres,
Into the hand of man. And mighty are its wonders:
Mobile telephones, the coaxial cable to carry the flow
Of five hundred separate voices, television, radar, sonar . . .
The search goes on, begun from the tremor of a voice.
Where will it end? It does not end. It begins always.

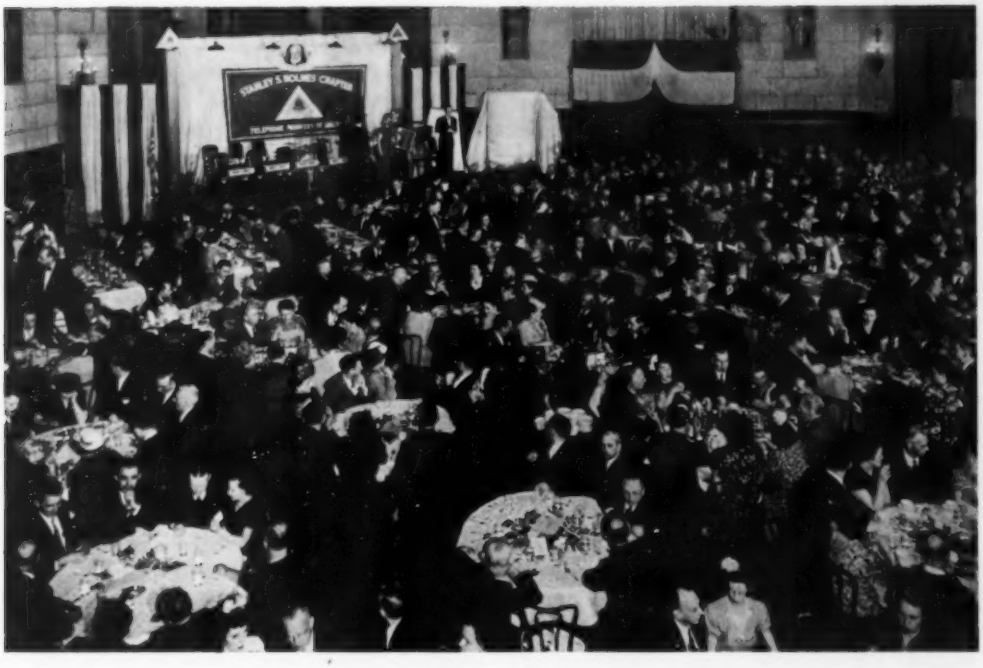
(MUSIC: UP AND OUT. APPLAUSE)

The Pioneers and the First Pioneer

THE Telephone Pioneers of America have long esteemed Alexander Graham Bell as first among the Pioneers, and Pioneer groups from coast to coast in this country and in Canada met to observe the centenary of his birth. More than 250 gatherings of chapters and councils and clubs, numbering from fewer than 50 to more than 2,000 in attendance, held luncheons, dinners, or evening assemblies on March 3.

Dinners and evening meals made a point of hearing the Telephone Hour, or in some instances just the address of A. T. & T. President Walter S. Gifford which was its climax. Usually the program was piped in by direct wire from the nearest NBC outlet. Many of the groups were able to view a premiere of "Mr. Bell," the A. T. & T. centennial motion picture long in the making, to help commemorate the day. Special courtesies were paid to Life Member Pioneers at many gatherings, and program committees everywhere provided a variety of appropriate entertainment.

Addresses eulogizing Dr. Bell were the order of the day or evening, of course. Some were made by com-



Many groups of Pioneers met to do honor to Alexander Graham Bell on March 3. For the newly-formed Stanley S. Holmes chapter it was the first meeting, and acceptance of the charter was one of the events of the program

FROM THE TOP FLOOR OF THIS BUILDING
WAS SENT ON JUNE 3, 1880
OVER A BEAM OF LIGHT TO 1325 L STREET,
THE FIRST WIRELESS TELEPHONE MESSAGE
IN THE HISTORY OF THE WORLD.
THE APPARATUS USED IN SENDING THE MESSAGE
WAS THE PHOTOPHONE INVENTED BY
ALEXANDER GRAHAM BELL,
INVENTOR OF THE TELEPHONE.
THIS PLAQUE WAS PLACED HERE BY
ALEXANDER GRAHAM BELL CHAPTER
TELEPHONE PIONEERS OF AMERICA
MARCH 3, 1947,
THE CENTENNIAL OF DR. BELL'S BIRTH

The President of the Board of Education of Washington, D. C. (left) and the President of Alexander Graham Bell Chapter of the Pioneers unveil a plaque on the wall of a school

pany officers, some by Pioneer officers. Where, in the territory of some companies, several gatherings were linked together by direct wire circuits, one man could speak to many. Somewhere else, a toastmaster might call on more than one man to address a few.

Whatever the time, the place, the form of the gathering, the theme was common to all: to do honor, in good fellowship, to one man—Mr. Bell.

The Heritage of the Pioneers

From the remarks of Mr. J. E. Harrell, President of the New England Telephone and Telegraph Company, to groups of Pioneer Life Members meeting in 13 cities on March 3:

"With a generous nature, it was ever his desire and pleasure to serve his fellow men; to treat them with kindliness and consideration. Wherever human welfare was concerned, his heart as well as his mind went into the work at hand. Particularly did he find great joy in his life-long work to lighten the burden of the deaf. You will recall that it was as a teacher of the deaf, that he first came to

Boston. In later life, he was their benefactor in founding and supporting organizations for their welfare. We who carry on the telephone business today hold dearly all that Alexander Graham Bell was and did. The desire to serve others, the urge always to pioneer, the telephone itself,—all these make up our inheritance from him. It is a heritage which you life members in the Telephone Pioneers received from the Pioneers who preceded you and which you faithfully passed on to us who are still active in telephone work. We in our turn will hand it on to those coming after us. This living chain—to guarantee continued progress in the telephone art—will perpetuate the unique bequest made to the world by Alexander Graham Bell who was born 100 years ago today."

The Span of a Single Lifetime

From the remarks of Mr. T. N. Lacy, President of the Michigan Bell Telephone Company, to 19 group meetings of Telephone Pioneers on March 3:

"From the first, Bell visualized his invention as an instrumentality of public service. He foresaw homes linked with offices, physicians quickly put in touch with their patients, the isolation of farms swept aside, and cities linked together with bonds of speech.

"Those ideas and ideals were Dr. Bell's contributions to the science of communication, and to the world. He predicted that nationwide telephone service could be developed, but he also realized that he alone could not do it. It remained for his successors to transform his hopes into realities, and that task ultimately required the minds, the hands, and the financial backing of literally millions of people. . . .

"If Dr. Bell could be here tonight, I am sure that he would want to express his appreciation of all that his successors have done to make his invention the important part of modern business and social life that it is today. On many occasions he *did* voice his pride—and his wonder—at the expansion and improvement of telephone service within *his* lifetime. And in 1922, shortly before his death, Alexander Graham Bell said: 'The telephone has gone all over the world since 1876. It has grown far beyond my knowledge. The telephone system as we know it today is the product of many, many minds, to whom honor should also be given. . . .'"

Teacher and Humanitarian

From the remarks of Mr. R. C. Verity, General Plant Manager, Chicago Area, Illinois Bell Telephone Company, to a luncheon of Life Members of the Pioneers in Chicago on March 3:

"In the years that have passed since the invention of the telephone, Bell's contributions to other fields have become obscured. The great passion of Bell's life was his work with the deaf. With the same enthusiasm that he displayed in everything that he did, he fought for decent education for the deaf, who, until his time, were often treated as though mentally deficient. . . .

"In 1878, Bell began an elaborate investigation into the cause of congenital deafness. For many years, he had been aware that many deaf children came from families in which deafness from birth had occurred again and again. For four years he collected information about families in which deafness appeared. In 1883, he published his findings. In his report, he indicated that those who forced the deaf to turn to each other for companionship were doing double damage—for when deaf people married, deaf children were frequently the result. His studies attracted international attention once more, and in 1900 he was appointed special agent of the United States government to take a Census of the deaf. . . .

The Canadian Post Office issued a Bell Centennial postage stamp, and many first-day covers were canceled at Brantford, location of the Bell family home in Canada

"The direction of his interests is clearly indicated by the number of his published lectures. While he published 22 speeches and papers on the telephone and the photophone (which was, incidentally, the forerunner of the infra-red telephone), he published 73 papers and lectures on subjects related to deafness, teaching the deaf to speak, surgery and eugenics. . . .

"Let us remember him today—not only as the inventor of the telephone, which was in itself one of the most humanitarian of all inventions—but, as he wished to be remembered: . . . a teacher of the deaf—devoted to lightening their burden. For it was as a teacher, as a humanitarian, that Alexander Graham Bell fulfilled his destiny."

Two Kinds of Pioneering

From the remarks of President Floyd P. Ogden of the Mountain States Telephone and Telegraph Company to a meeting of Telephone Pioneers in Denver on March 3:

"Tonight we celebrate the hundredth anniversary of the birth of the first telephone pioneer—Alexander Graham Bell. He was as truly a pioneer in the realm of science as the hardy trappers and explorers were in their field as they pushed the frontiers of civilization westward further into the wilderness.

"It is interesting to realize that at the time of Bell's birth, although parties of white trappers and explorers sometimes camped at the junction of Cherry Creek and the Platte, there was no permanent settlement where Denver now is; in fact, the sway of the Indian was still unchallenged. However, the route of the 'Trappers' Trail' between Taos, New Mexico, and Fort Laramie, Wyoming, passed over what is now the site of Denver. Mounted riders frequently carried messages between these two points. . . .

"To indicate to you the difficulties ahead of the telephone pioneers at that time, I need only remind you that twenty-four years later—at the turn of the century—there were only 1,322,000 telephones in the country, 1.7 telephones per hundred population. Today there are 32,000,000 in the United States: 21.8 per hundred population.

"We telephone people celebrate the centennial of Bell's birth not alone because his adventures in pure science made possible the world-wide service of communications we are privileged to render, but because he was a great humanitarian, a great benefactor to mankind, especially to the handicapped."

The Bell Centennial in the Press

THE CENTENNIAL *of Dr. Bell's birth was widely recognized, and newspapers throughout North America noted the day and its significance. Of their many comments, some few may be quoted in part:*

"Wonders of Wonders," the New York *Times* heads its editorial about Dr. Bell, and concludes it in this fashion:

"The telephone outgrew Bell just as the electric lamp outgrew Edison. Long distance communication was beyond Bell. It demanded research of the highest order in physics, chemistry, metallurgy, engineering, magnetism, the mechanics of speech. So huge was the task that an industrial laboratory had to be organized, and out of the industrial laboratory that dealt with the transmission and reception of speech came scores of inventions that led to transatlantic radio and to television.

"It is always thus. An invention is not a terminal, but an avenue which is traveled by great technologists who behold ever more magnificent vistas as they progress. Lord Kelvin, while he was still Sir William Thomson, must have beheld some of these vistas in his mind's eye. 'Wonder of Wonders' he called the telephone. That the human voice should be carried to the uttermost ends of the earth still astonishes. If in the middle of the last century our fathers had read to their children a tale about a charming princess who summoned an equally charming prince to her rescue over a copper wire with the aid of some wonderful lamps in which magical filaments glowed, there would have been cries of admiration. Well, fairy tales have a way of coming true in science and invention. And Bell's telephone is one of them."

The New York *Sun* distinguishes —as has many an anxious individual —between the monetary value of a telephone and its intangible worth to human-kind:

"Now there are 51,500,000 telephones in the world, 32,000,000 of them in the United States. In New York city alone there are 2,218,000 of them, 928,000 more than there are in all of South America. Today sixty countries and territories are linked by radio telephone and the development of the mobile telephone has progressed so far that by the middle of this year half of the cities in the United States with more than 100,000 population, and 5,000 miles of the busiest highways, will be equipped for that type of service. It would be difficult indeed to compute the debt which the world owes to Alexander Graham Bell. He probably would not care as much about what it means in dollars as the lives it saves when help is needed quickly, the comfort it brings by dispelling loneliness in isolated spots, the friendships it strengthens by speeding social contacts. Granted enough data, statisticians could calculate what the telephone means in the dollars and cents of the business world. For the balance of the debt there is no human measure."

The Ocean Grove (N.J.) *Times* terms the Bell System a monument to the telephone's inventor:

"It can be truly said that the Bell System belongs to people in all walks of life, in the cities, towns and rural areas of America. Five states have more than 50,000 stockholders each, 26 states more than 5,000 and no state has fewer than 500 stockholders.

"The capital of the Bell System comes from the savings of the many rather than the wealth of the few. There could be no finer monument than this to the memory of Alexander Graham Bell, the inventor of

A "still" from the A. T. & T. Company's motion picture "Mr. Bell." Here he says good-bye to one of his deaf pupils after having taken refuge on the porch of a Boston hotel during a storm

the telephone, whose birth 100 years ago will be celebrated on March 3."

The Washington (D.C.) *Post* quite naturally feels a rather proprietary interest in the occasion:

"A century ago today Alexander Graham Bell was born in Edinburgh, Scotland, but it was only a little more than 70 years ago—that is to say, within the lives, if not the memories, of many persons still among us—that he gave the first successful public demonstration of his talking gadget at the Centennial Exposition in Philadelphia. This, as we now realize, was in invention comparable in its historical significance to the smelting of iron, or to first printing from movable types, or to the earliest utilization of steam power. Indeed, the telephone has become so much a necessity and so much a commonplace of our existences that it is difficult for us to remember that even less than two generations ago the great majority of civilized mankind managed to get on, after a fashion, without it. . .

"The Bell Centenary has, of course, a special interest for Washington, because it was here that Dr. Bell made his home throughout the greater part of his life. He was perhaps, until his death in 1922, the most famous of our nonpolitical residents. This is also the home of many of his numerous descendants, who now extend into the fourth generation. His local memory is very closely associated with the National Geographic Society, of which he was one of the founders and for a time president. The present head of the society is his son-in-law, Dr. Gilbert Grosvenor. Quite appropriately, the National Geographic Magazine has devoted the leading article of its current number to the latest marvels of the telephone laboratories."

Discussion of the life of Bell leads the editorial writer of the Anderson (Ind.) *Herald* into a discussion of the telephone's future:

"Each and every one of us who own stock in the company, who are employed by it, who use the telephone in our daily life, must realize that the Bell Telephone Company is not a closed corporation, a giant monopoly, but part of the nation itself. This is the democratic pattern. It is a part of the framework of our nation and in so much as it has contributed to the American way of life, it is good.

"But even as men and women are honoring the birth of the inventor, they are looking to new horizons. These inventors, research scientists, linesmen, operators, administrators, subscribers know that the future is bright and new vistas are to be opened by this invention and the children of this invention. The company could never have became a part and parcel of everyone's daily life save in a democracy. And the democracy could never have been what it is today without the telephone."

A small part of a long "column" in the St. Joseph (Mo.) *News-Press:*

". . . You will read and you will hear of this amazing man, born in Scotland, educated in Scotland, Germany and America. His life was a life of devotion to a cause, not devotion to money or fame. He devoted his life and labor to inventive study as St. Francis Xavier devoted his life to missionary zeal or David Livingstone gave his to African explorations and Admiral Byrd is giving his to polar explorations. . ."

"Scientific progress knows no national, no racial barrier. This is the centennial year of two towering geniuses, Edison the American born, Bell the Scotch born. Invention and discovery know no narrow boundaries from Galileo the Italian to Daguerre the Frenchman to our own Americans from Franklin down through Whitney and Fulton and Morse and McCormick, Westinghouse and Goodyear and the Wrights. And it is true even to the youths working today in oblivion in the laboratories of our great corporations. These yet to achieve fame are sinew of that intangible, invisible something that is the soul of America, the peerless. Lives of men such as Alexander Graham Bell are their eternal beacons, leading them ever onward."

How the soil of free enterprise nurtured the growth of the telephone is the theme of—among others—the San Marino (Cal.) *Tribune:*

"It was in America, the land of free enterprise, that the telephone was born and grew up. It was while Dr. Bell, in the footsteps of his father and grandfather, was helping afflicted people to live happier lives, by teaching deaf children, and adults too, how to speak, through a system of 'visible speech,' that the idea, the vision, of the telephone first came to him. One more example of how American genius spreads itself world wide for betterment of all peoples; for the wires of the Bell System reach everywhere. . ."

"He Wasn't Afraid to Think," headlines the Portland (Ore.) *Oregon Journal:*

"The telephone brought him a fortune, but money for him was something to be used for others. He hastened the development of enlightened methods of education of the deaf, he supported aviation, he devised an electrical apparatus to locate bullets or other metals in the body, he described a device having the same purpose as today's iron lung, he directed experiments in breeding sheep. His mind pioneered. He didn't 'keep forever on the public road, going only where others have gone.'"

Where does this paragraph from the Toronto (Ont.) *Globe and Mail* leave telephone users south of the international border?

"The spread and development of Mr. Bell's invention moves even today at a pace that is astonishing. Telephones are everywhere: in ships and planes and trucks and trains, in automobiles, coal mines, sub-

Miss Joan Blair, great-granddaughter of the inventor of the telephone, wears a costume of the 1870s to pose with a model of her famous ancestor's first telephone

marines, and even in that last sanctuary of human privacy, the bathroom. We Canadians are prolific users of the machine, making three billion phone conversations through 1,700,000 telephones over 380,000 miles of wire every year, a record second only to that of the United States. One must conclude from this that either we are tremendously advanced culturally and scientifically in comparison with the rest of the world—or, which may be closer to the truth, we are disgracefully talkative."

The Windsor (Ont.) *Star* notes that while Bell was born in Scotland, Canada claims him as her own, and continues:

"There is, however, honor and to spare in this invention which has meant so much in the development of our civilization. It was brought forth on this continent by a great man, a product of the United Kingdom who owned both Canada and the United States as countries of his adoption. The Dominion can rightfully claim with pride a share in his momentous life work."

And *La Tribune* of Sherbrook (Que.) concludes a long and informative editorial:

"L'univers civilisé honore en ce jour la mémoire de ce genie prodigieux. Plus heureux que bien d'autres savants et inventeurs, Bell aura mis à point et perfectionné un instrument devenu d'usage indispensable et qui perpetue à chaque instant du jour le souvenir de son nom."

Helen Keller and Dr. Bell

The following is a stenographic transcript of part of a broadcast by George Carson Putnam over WOR *and the Mutual Broadcasting System on March 3:*

"Everybody knows the story of Helen Keller, the girl who lost her sight and hearing at the age of 19 months. Miss Keller is now 67 years of age. When she was seven, Anne Sullivan Macey went down to the little town in Alabama where Helen lived in a tight little world all of her own, unable to see, unable to hear, unable to talk—alive, but yet not really living. Anne Sullivan Macey was Helen Keller's teacher from 1887 until the day of her death in 1936.

"In that time, Helen Keller has won worldwide fame and has probably met more of the world's truly great than any other living person. Well, last Friday I telephoned Helen Keller's residence up in Westport, Connecticut. I talked with Polly Thompson, that wonderful Scottish lady who's been Miss Keller's constant companion for almost half her life . . . and she said they'd be glad to come to the studio and talk with me.

"Meeting Helen Keller is one of the greatest thrills I've ever experienced . . . and here's how we had our interview. Polly Thompson holds Helen Keller's right hand, and her quick fingers spell out each question by touch, and then the smiling Helen Keller raises her face and answers in a speech somewhat halting, but quite understandable as one becomes accustomed to it. Well, we discussed what we were going to say . . .

"To open the transcribed interview I turned to Polly and asked:

Transcription

"Miss Thompson, how long have you been a companion to Helen Keller?"

MISS THOMPSON: "Thirty-two years."

MR. PUTNAM: "I understand that Alexander Graham Bell was instrumental in aiding Miss Keller many years ago."

MISS THOMPSON: "Yes, he was, Mr. Putnam."

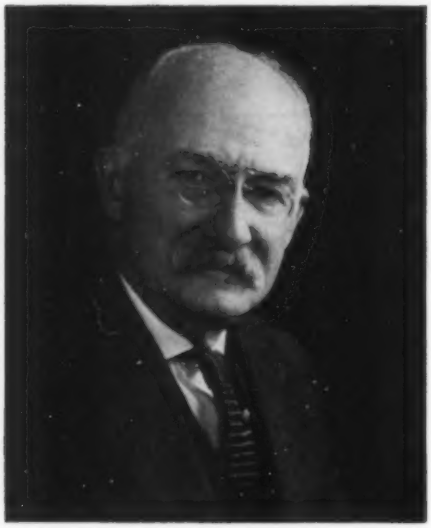
MR. PUTNAM: "Will you tell us about it, Miss Thompson?"

MISS THOMPSON: "Dr. Bell counseled Helen's father to write to the Perkins Institution for the Blind in Boston, asking if a teacher could be sent to her, and out of that suggestion came the light and the joy and accomplishments of Helen's life. Helen always called Dr. Bell her old friend. He often encouraged and advised Anne Sullivan Macey, Helen's teacher, in her work in teaching Helen to speak. What has endeared Dr. Bell most to Helen is the fact that his first wish while working on the telephone was to make the deaf hear, and Helen feels it would be a satisfaction to him on this anniversary if he could observe their ever increasing progress towards all-around education and normal living."

MR. PUTNAM: "Thank you very much, Miss Polly Thompson, companion to the famed Helen Keller, and thank you, Helen Keller, very much."

(*End of Transcription*)

"As we finished the interview, gracious Helen Keller rose and took my hand. 'Mr. Putnam,' she said, 'I'll long remember this day. You see, it has a double significance to me, for just 60 years ago this third of March, Anne Sullivan Macey traveled to the little town in Alabama where I was living, and took me under her wing. So, you see, it's a double celebration for me. The 100th birthday of Dr. Bell and the 60th anniversary of Anne Sullivan, who led me by the hand into a world I never knew.' "



PRESIDENT HARRY B. THAYER
He was head of the American Telephone and Telegraph Company when the BELL TELEPHONE QUARTERLY *was launched in April 1922*

The First Twenty-Five Years

"THE ADMINISTRATION of an institution like the Bell Telephone System, with its responsibility for a service entering into all of the ramifications of the domestic and commercial life of millions of users and with its responsibility to hundreds of thousands of stockholders and security holders, to work effectively, must be actuated by a continuous policy or motive and must make every line of action conform to a programme directed toward carrying through that policy. Changes in times and conditions may properly affect the programme but the underyling policy must be constant."

Those words are from the Annual Report of the American Telephone and Telegraph Company for the year 1922. Even a quarter of a century ago, they testify, the national obligations of the Bell System had long been accepted, its institutional character recognized, the direction of its over-all policy established.

As one more means for the furtherance of that policy, there was established in that year at A. T. & T. Headquarters a publication for the information of Bell System officers and executives. It was called the BELL TELEPHONE QUARTERLY, and Volume I Number One bore the date of April 1922.

The present issue of its successor, the BELL TELEPHONE MAGAZINE, likewise appearing in April, is Volume XXVI Number One.

It marks twenty-five years of continuous publication.

AT THE beginning of 1922, there were, for instance, 13,380,000 Bell and connecting telephones in service, and 224,000 employees; the daily average of telephone conversations in that year was 38,350,000. At

JAMES D. ELLSWORTH

As publicity manager of the A. T. & T. Co. Information Department in the early 1920s, he was responsible for producing the QUARTERLY

the beginning of 1947 there were 31,600,000 Bell and connecting telephones, and 617,000 employees; and for the preceding year the daily average of telephone conversations was 105,762,000.

If twenty-five years have in their passing brought no such startling contrasts in this publication, they have seen some changes nonetheless.

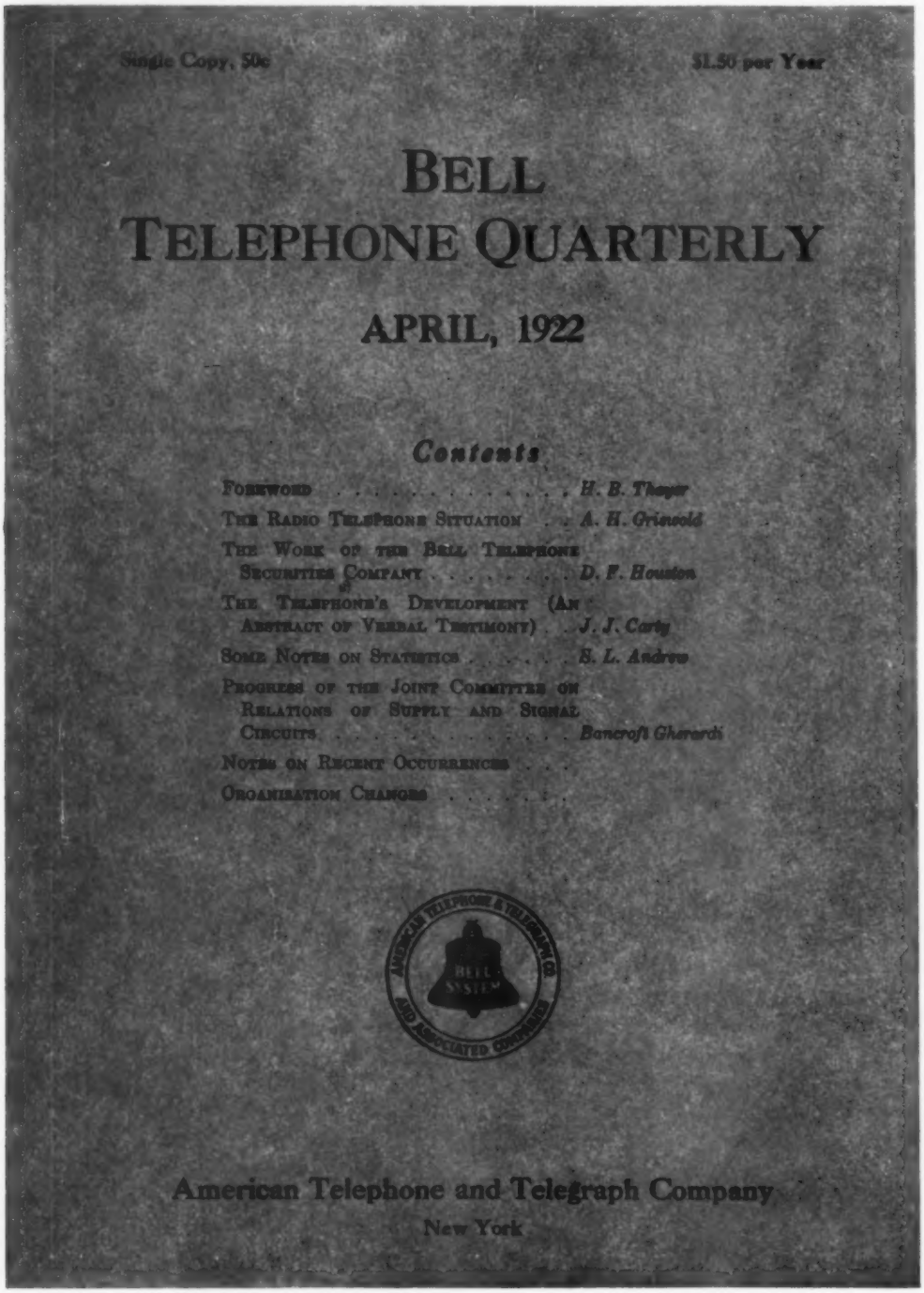
Appearance has changed, naturally, in keeping with changing times. But more significant, we have tried to broaden the content of the publication as its readership has broadened. Although editorial progress is not necessarily obvious from one issue to the next, the growth of the past quarter-century is on record in the 25 volumes now completed.

THE NEW VOLUME is begun—the view is forward.

The MAGAZINE still aims—as its predecessor did twenty-five years ago—not to instruct but to inform. It hopes to leave to others those matters which are of necessity largely technical. It tries to be simple and clear—which in a complex business isn't always easy—and interesting. Within those ground rules, its field is as wide as the industry, and so is the opportunity.

"A young, active, and progressive institution," Mr. Thayer termed the Bell System of 1922. The QUARTERLY and the MAGAZINE have reported regularly many instances of its vitality in the twenty-five years since. Every issue of the publication has borne on its masthead the words "A Medium of Suggestion and a Record of Progress." The MAGAZINE intends to continue its function as a record of progress. May is serve also and increasingly as a medium of suggestion to the people of the Bell System as they carry on their work of national inportance!

THE EDITORS



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BELL TELEPHONE QUARTERLY

APRIL, 1922

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American Telephone and Telegraph Company

New York

The cover of the first issue, slightly reduced in size. The authors were all important figures in the A. T. & T. Company a quarter of a century ago

BELL TELEPHONE QUARTERLY

A MEDIUM OF SUGGESTION AND A RECORD OF PROGRESS

Published quarterly for the Bell System by the American Telephone and Telegraph Company

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AMERICAN TELEPHONE AND TELEGRAPH COMPANY
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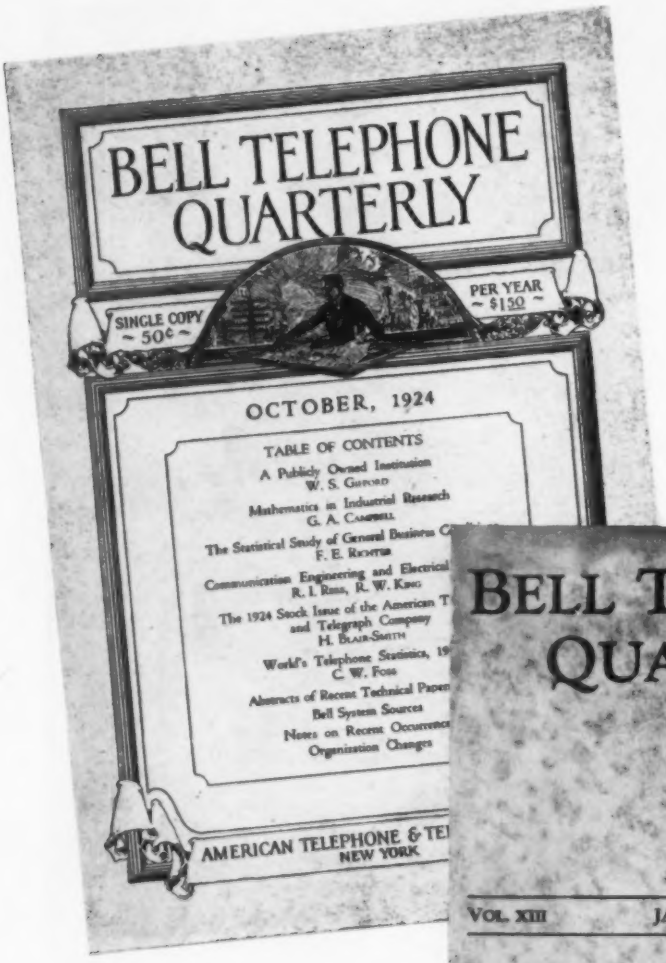
Vol. I APRIL, 1922 No. 1

Foreword

BEING a young, active and progressive institution, the Bell Telephone System is continually doing new things, sometimes in service to the public, sometimes in operating technique, sometimes in commercial policy. The new thing may be done in any part of the country. These new things are interesting to telephone men in other parts of the country. If they are experiments in service or technique and are successful, they ultimately become generally known by being standardized and covered by specifications and described in bulletins. There are some even more important innovations, interesting even in the nebulous state, and more so as they become accomplished facts, which the presidents and general officers would like to observe during the experimental period. I refer to the type of things which we have usually discussed in conferences of presidents and general managers. As a medium of suggestion, a report of progress and perhaps an announcement of results on matters of that type between conferences, we launch with this number the BELL TELEPHONE QUARTERLY.

H. B. THAYER.

President Thayer describes the ways in which the QUARTERLY *plans to serve the Bell System. The page size was slightly larger than the dimensions of the present page*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OCTOBER, 1924

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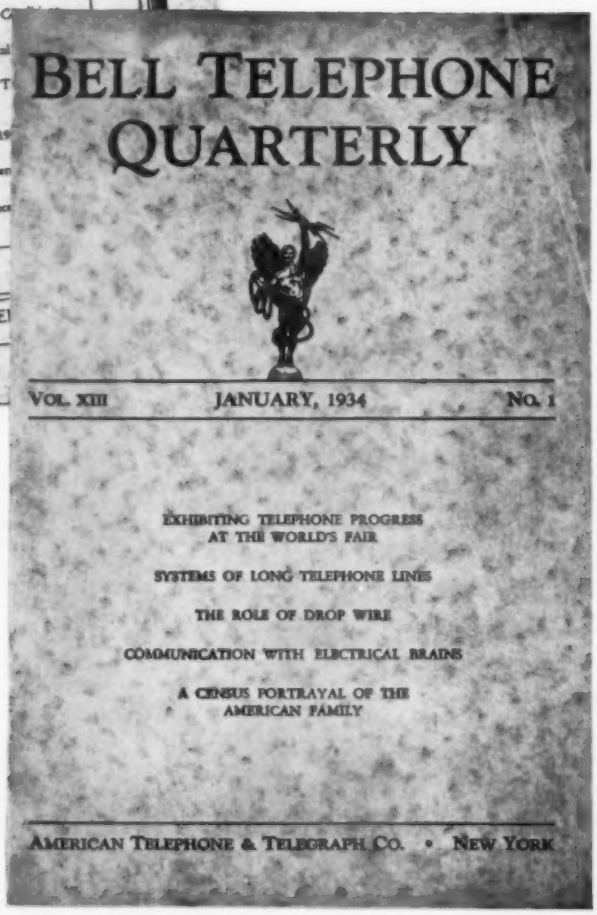
AMERICAN TELEPHONE & TE
NEW YORK

The cover design at the left served for 10 years, and that below until the present design was adopted in 1943. Dark blue ink on a lighter blue cover stock was standard for nearly 20 years


BELL TELEPHONE QUARTERLY

VOL. XIII JANUARY, 1934 NO. 1

EXHIBITING TELEPHONE PROGRESS AT THE WORLD'S FAIR

SYSTEMS OF LONG TELEPHONE LINES

THE ROLE OF DROP WIRE

COMMUNICATION WITH ELECTRICAL BRAINS

A CENSUS PORTRAYAL OF THE AMERICAN FAMILY

AMERICAN TELEPHONE & TELEGRAPH CO. • NEW YORK

QUARTERLY *became* MAGAZINE *in 1941, without other change in the cover's general appearance. The nominal charge was discontinued in 1939*

The Extension of Bell System Overseas Telephone Service "With the Rest of the Known World" Has Now Conquered The Frontiers of Distance

America Is Calling

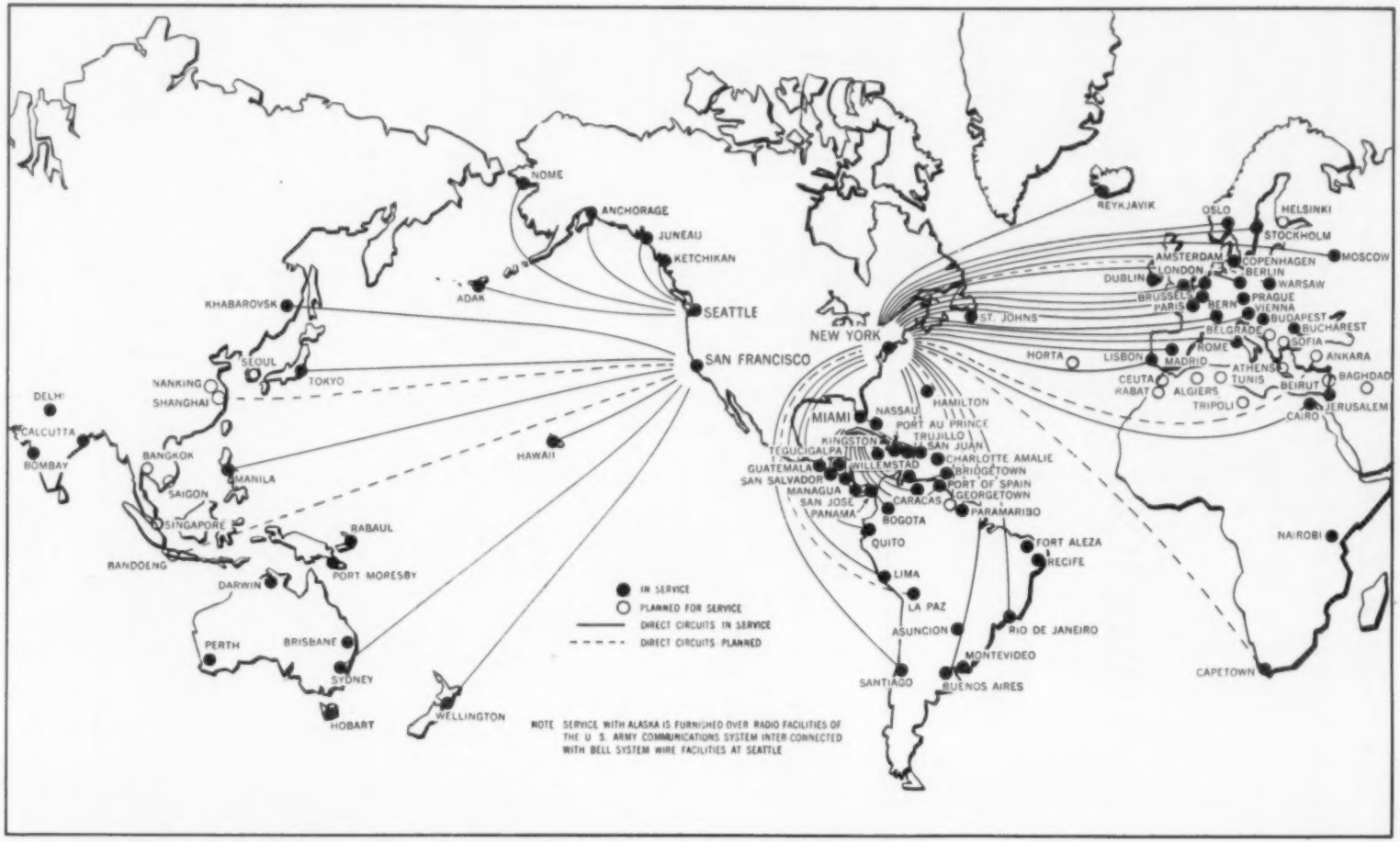
William G. Thompson

EVERY DAY, in this fast-moving world, a British solicitor, a French modiste, an Argentine rancher, a New Zealand wool broker, an Egyptian tobacco grower, a Russian opera singer, or their compatriots may answer the ring of the telephone to hear, in their respective languages, an operator say "America is calling." For the range of the telephone now spans the world. Speech has conquered the frontiers of distance.

As Bell System overseas telephone service observes its twentieth anniversary this year, it is interesting to look back to the original Certificate of Incorporation of the American Telephone and Telegraph Company, executed in 1885—for it contains a remarkable prophecy. Less than 10 years after the invention of the telephone, the founding fathers of the Bell System stated in that document their intention to interconnect all places in the United States, by cable and other appropriate means . . . "and *with the rest of the known world.*" At a time when the farthest stretch of the voice by wire was from New York to Boston, such a forecast had in it the pioneering spirit of America.

By 1892, only seven years later, long distance lines had reached westward to Chicago. Such were the technical difficulties encountered beyond that distance, however, that it was not until 1915 that the vacuum-tube amplifier, developed into a telephone repeater, finally made conversation possible between New York and San Francisco. Then was made practicable the fulfillment of that prophecy of a telephone system linking people throughout the United States; then the oceans bounding our nation became the new speech frontiers.

The next stage in telephone expansion began that same year, 1915. Successful experiments by radio were conducted between Arlington, Virginia, and Paris, France, transmitting one-way speech across the ocean for the first time. Further developments in the field of the vacuum tube had



OVERSEAS RADIO TELEPHONE SERVICE FROM THE UNITED STATES

DIRECT AND PRINCIPAL INTERCONNECTING SERVICES

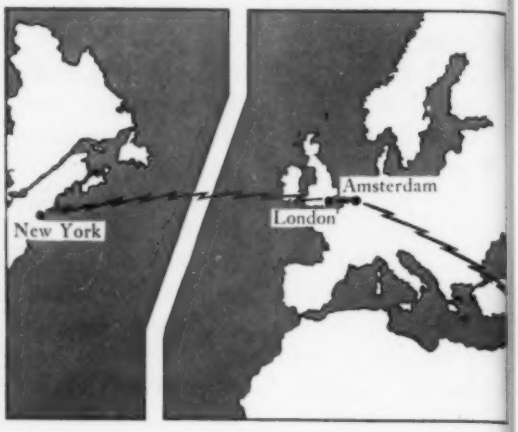
given telephony a new weapon to conquer distance.

A decade later, transoceanic radio telephony was ready for public use, and Bell System overseas telephone service was inaugurated on January 7, 1927. On that significant day Walter S. Gifford, President of the A. T. and T. Company, made the first overseas call to Sir G. Evelyn Murray, Secretary of the General Post Office in Great Britain, over the initial New York-London radio telephone circuit. Telephony had reached its first overseas beachhead on its world-wide advance.

After the official New York-London opening, the overseas service truly began its global march. Within eight years this expansion was dramatically demonstrated when, on April 25, 1935, Mr. Gifford again made an overseas call, but this time to Theodore G. Miller, then Vice President in charge of the Long Lines Department, who was in an adjoining room at long distance headquarters in New York. They spoke with each other over a circuit which encircled the world—starting in New York, reaching London by radio, next going via submarine cable and land lines to

The first circuit to London was by "long wave," utilizing a frequency of 60 kilocycles and transmitters of 200 kilowatts. This tremendous power was poured into an enormous antenna system one and one-half miles long, mounted on six steel towers which rose 420 feet above the Long Island countryside. The signal from England was received on a 3-mile-long antenna in the wilds of Maine, where electrical interference was at a minimum. Signals were amplified there and then sent by special circuits to New York. This long-wave equipment is still available, used principally as a stand-by, being placed in active service only when the short-wave circuits are inoperative.

The opening of commercial radio telephone service, January 7, 1927. This historic photograph shows A. T. & T. President Walter S. Gifford speaking to London while company officials listen



A dozen years ago Mr. Gifford (left) talked with the late Theodore G. Miller, then Vice President in charge of the Long Lines Department, who was in an adjoining office, over a circuit encircling the globe

Amsterdam, thence by radio to Bandoeng, Java, traveling over another radio link from there to San Francisco, and finally, by wire line across the continent, back to New York. A 23,000-mile call!

Encircling the World

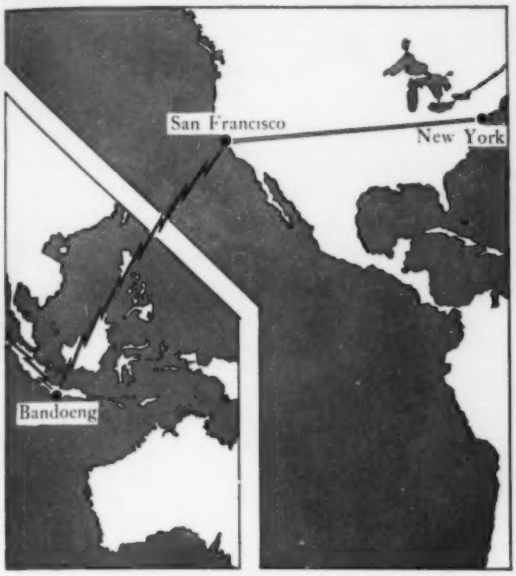
HERE is a brief sketch of the steps taken in building up the world-encircling telephone network which made that unprecedented call possible.

Within a short time after the 1927 opening, the English Channel was crossed and most of western Europe was joined to the transatlantic circuit by existing wire-line connections from London. In the next few years all of the major countries of Europe and North America were interconnected for telephone service.

The next approach to the goal of world-wide service was toward the south. In 1930, the initial circuit with South America was established between New York and Buenos Aires, Argentina. This was followed by circuits with Brazil and Peru, and connections with Chile, Paraguay, and Uruguay through Buenos Aires.

Westward, the course of overseas telephone service took its way across the Pacific. In 1931, short-wave radio stations with a radio telephone terminal at San Francisco were erected to serve countries in the Pacific and Far East. A circuit between San Francisco and Honolulu, T. H., became the first stepping stone across the Pacific. The further extension of service across that ocean reads almost like the voyage of Magellan: Manila, the Philippines, Tokyo, Bandoeng. Continuing its advance, overseas service reached Shanghai, China, in 1937, and Sydney, Australia, by direct circuit in 1938.

A third overseas radio telephone terminal, designed to serve Central America and the Caribbean, was established at Miami in 1932. The



Bahama Islands were the first territory to be connected with this terminal, followed in the next few years by Venezuela, Colombia, the Central American countries, Puerto Rico, and many others places in the West Indies. By 1939, most of Central and South America and many of the islands of the Caribbean were linked to this country by voice channels.

In addition to the service with Europe, the Americas, and Pacific territories, connections with North and South Africa, the Near East, Iceland and India were available via Europe.

The Change from Long to Short Waves

OVERSEAS SERVICE was initiated with long wave equipment; but the engineers recognized that such mammoth systems did not lend themselves to economical or widespread service. Nor was there sufficient frequency space in that part of the spectrum available to accommodate more than a few such circuits. Accordingly, the development of short waves between 4 and 20 megacycles was promptly undertaken; and in June, 1928, the first commercial short-wave circuit was set up between New York and London. Its performance was such that two more short-wave circuits were soon introduced, and from that time on all new systems installed have been short wave.

Although a great improvement over the long wave, these original short-wave systems still required extensive and expensive antennas mounted on high steel towers. With this problem in mind, the engineers next developed a "rhombic" antenna, the type currently in use on most circuits today. Relatively simple and inexpensive, these antennas can be erected quickly and do not require too much space.

The most significant development in overseas service to occur in recent years is the adaptation of the single-

sideband method of transmission to short-wave telephony. This method has two advantages over conventional double-sideband transmission. First, it is more efficient, so efficient, in fact, that it uses only about one-tenth the power required by double sideband. A second and more important advantage is that with a single-sideband system it is possible to carry two or three conversations on the same radio system simultaneously.

The short-wave frequency spectrum is a very congested medium, since it must carry the long distance radio communications of the entire world. One of the biggest problems in radio operation is the allocation of the frequencies needed for all services so that each may operate without interference with the others. Not only must provision be made for telephone services but also for telegraph services, broadcasting, services to ships at sea, to aircraft, to the military, and many other services. Single sideband transmission contributes to the efficient use of frequency space, and without this system the growth of radio telephone service to meet the post-war needs of the telephone user would necessarily have been limited. The shortage of frequencies still remains the principal difficulty to be overcome in the expansion of overseas radio telephony.

Still another development in overseas service involved the establishment of direct circuits. As the growing network fanned out and traffic increased with the European continent, it became desirable to provide direct circuits to the countries originally connected through London. By 1936, the New York-London group had grown to four circuits (short wave) and one standby circuit (long wave). Late in that year a single circuit was set up between New York and Paris, with an alternative route provided over the New York-London group. Plans were then worked out to establish direct circuits with Berne, Berlin, and Rome in 1939. In the midst of preparations to test the New York-Rome circuit, and with the requisite radio equipment on the high seas enroute to Berne, war came upon Europe.

Storm over Europe

THE STORM brewing over Europe broke suddenly upon the world on September 3, 1939. Though the climax came suddenly, there had been indications through overseas telephone service contacts that all was not well. During the progress of negotiations in 1938, Swiss telephone officials hinted that "Der Tag" was imminent. By the spring of 1939, they were pressing vigorously to secure direct circuit equipment to keep from becoming isolated telephonically when war came. Although not fully recognized at the time, another significant portent was the determined efforts of the Italians to place the new Rome-New York direct circuit in service during that summer, although it was not scheduled until the fall of 1939.

In the last days of August of that year, the military commands in Great Britain and France restricted to government traffic the use of overseas circuits to and passing through those countries. This cut off the European continent from telephone contact with the United States.

But not for long! Fortunately, the New York-Rome circuit was nearly ready for service. Tests were rushed, and service was opened to Italy on

A general view of the new overseas operating room at Long Lines headquarters in New York, with positions for 85 operators. Here are handled calls to Europe, South America, the Near East, and to ships on the Atlantic

September 11. Within a few days, arrangements which would ordinarily require several month of negotiations were made to reach the remainder of Europe over landline circuits to Rome.

In the meantime, further routes were sought. It was known that the Dutch were well advanced in the field of overseas radio telephony and that they had considerable radio plant in use between the Netherlands and the Dutch East Indies. The possibility of a connection with the Netherlands was thereupon explored. The Dutch were most coöperative, and within a few days of the first negotiations a New York-Amsterdam circuit was established, following by only a day or so the setting up of the Rome circuit. At New York, it utilized facilities formerly used to London, and, in Holland, facilities normally used with Java. Thus, within a few days, service with Europe outside of Great Britain and France was again available for the public.

Incidentally, in the rush of getting two strange radio stations started, one of the Bell System radio engineers had great difficulty in trying to understand, over the circuit, the differences in equipment and operation at New York and Amsterdam. Suddenly he recalled that recent engineering publications had descriptions of both the Netherlands and the New York overseas systems, and he asked if Amsterdam had them. Sure enough, they did, and the material provided the means of opening the service in a matter of hours instead of weeks.

With the Italian and Dutch circuits available, traffic was divided. The Amsterdam circuit carried messages to the Low Countries and Northern Europe, while the Rome circuit carried them to Central and Southern Europe. The total volume

of transatlantic traffic was of course below its normal level, because of the loss of most of the calls to France and England. However, with war at their doorsteps, traffic to the other countries increased greatly.

This situation continued during the fall and winter of 1939. In the spring of 1940, with the invasion of Denmark and Norway, service to those countries was lost.

Later, with the occupation of the Netherlands and Belgium, the Amsterdam circuit was closed down as the Germans entered the city. Signing off, the Dutch told the New York radio terminal staff good-bye, sent their thanks for their coöperation, and asked that their regards be forwarded to South American radiotelephone stations with which they also had been working.

The invasion of France followed swiftly, and the Paris radio telephone station closed down on June 10, when the Germans were a few miles off. Shortly afterward, Paris fell.

Once more, transatlantic service was dependent upon the single New York-Rome circuit for all traffic with the European continent.

New Circuits into Europe

ALL during these months, the Western Electric Company had been trying desperately to complete certain radio telephone equipment for the Swiss, so that a New York-Berne circuit could be established. From the start, the Swiss station near Berne had seemed doomed to misfortune. Built prior to the summer of 1939, it had been destroyed by fire before it was finally completed. It had then been rebuilt and a high-power transmitter installed; but the new single sideband equipment was being built by Western Electric in this country.

The Germans, although at war, went ahead with plans to build all their own equipment, and in the late spring they advised that they were ready. It so happened —and of course no one knows just quite how—that the tests on the German circuit did not reach a satisfactory conclusion until the Swiss circuit was completed. By a strange coincidence too, the circuits were ready at the same time—and so the circuit to Switzerland and the circuit to Germany were opened on the same day: July 10, 1940.

It was a race against time, since there did not appear to be any way to get this equipment to Switzerland if Italy entered the war. Luckily, it was decided to send parts as completed, and the receiver was shipped early in May, in time to arrive safely in Switzerland. Late in May the transmitter and control equipment were completed. However, through delay in obtaining a British navicert and the insistence of the Swiss that they be shipped on an American liner, the equipment started for Geneva on a vessel which turned around in mid-ocean and returned to this country when Italy declared war.

The Swiss are experts in the art of telephony, although they were then not experienced in radio telephony. With necessity as the spur, they set to work and rigged up a control terminal from spare telephone plant. It was arranged that they use their double-sideband transmitter to talk with New York. Receiving from New York, they utilized the single-sideband receiver already delivered

A close-up of a switchboard position in the new overseas operating room

and installed. This established a test circuit over which American and Swiss engineers discussed means of using spare material from the Swiss wire telephone plant to build the privacy equipment. By the middle of July, 1940, a New York-Berne circuit was ready—and proved an invaluable link throughout the war.

In the fall of 1940, a New York-Madrid circuit was set up by utilizing radio telephone plant near Madrid which had been used for service with South America prior to the Spanish civil war. When Madrid was about ready, it was discovered that its station was shy an important but, fortunately, not bulky item of apparatus some fifty pounds in weight. None was available in Spain, but one was taken out of a radio station here. Handled as baggage, it accompanied an obliging passenger on the Pan American Clipper.

Leaving on Thursday, on Friday it was in Lisbon, where it was met by a special truck and rushed toward Madrid to be installed the next day. But Saturday night came with no word, and the Spanish force sat up all night waiting to install it. For, after flying across an ocean and dashing through Portugal and Spain, the all-important item was lost for twelve hours in the suburbs of Madrid, since the driver couldn't find his way in the dark. When he was located, the tired engineers went to work, and soon the equipment was installed and working. It continued to function until recently, when it was replaced by new single-sideband equipment.

Meanwhile, overseas service to the Pacific and Latin America continued to grow, unhampered by the war in Europe. Until the fateful 7th of December, the year 1941 looked like a quiet period for overseas. But as the news of Pearl Harbor spread, the circuits to and from Honolulu were swamped with a backlog of thousands of calls. Upon the declaration of war the Berlin circuit was cut immediately. However, at the request of the State Department, the Tokyo circuit was kept up some hours longer, for additional calls with Ambassador Grew.

As the Japs invaded the Philip-

The overseas radio telephone circuit control room in the Long Lines building in New York

pines and drew nearer and nearer to Manila, the telephone people there continued to operate the circuit with a quiet courage never to be forgotten. One day a calm voice asked for instructions as how best to destroy the radio telephone equipment at the very last minute. It added that if Manila did not answer on schedule very soon it would signify they were dead, prisoners or on Bataan. The speaker, then general manager of the telephone company in the Philippines, did escape to Bataan, and managed to get away at the very end. But two years later, while serving on General MacArthur's staff, he was killed in a plane crash.

With the fall of Manila came the loss of the circuit to the Philippines. A few months later, as the Japs drove south, the circuit with Bandoeng, Java, went down, the Dutch keeping it going until, at the very last minute, they destroyed their stations.

By early 1942, while service to South America and the Caribbean continued, public service to Europe was confined to Switzerland, Spain, and Portugal. In the Pacific, Hawaii alone remained connected. Circuits with London and Sydney were continued, but for government calls only.

Multi-channel Teletypewriter for the Army

As a result of the discontinuance of public telephone service to countries at war, there were available a number of facilities on both coasts which were put to good use for Army operations, starting in July, 1942. They were converted into multi-channel teletypewriter circuits, and in the United States, became the backbone of the Army's Command and Administrative Network which carried the great bulk of war traffic between

this country and the widely scattered Theatres of Operation overseas.* Many of the transmitters now handling traffic for the public are honorably discharged veterans.

During World War II, the broadcasters of overseas news became daily users of Bell System overseas circuits. To be sure, news programs from abroad were broadcast to this country on overseas circuits in the pre-war years, but such usage was reserved for special events of unusual interest. However, in wartime, programs from London and other foreign points were heard several times a day, and many of them came over radio telephone circuits. Likewise, the Office of War Information here used such circuits several hours each day to transmit programs to Europe.

D–Day was a proud occasion for overseas telephone service. Over one of its circuits, operated jointly with the Army, came the first word to the War Department that the invasion had started, as well as the first accounts of the landings to the broadcasting networks and news agencies. The supervisor in the overseas control office at New York was one of the few "alerted" to expect the great news, and he was the first person in America to know, early that June morning, that the victory march had begun.

Service for the Men Abroad

EVEN BEFORE D–Day, the Bell System had plans under way to restore pre-war overseas service to war-devastated areas and to strengthen the whole overseas network for the post-war needs of the public. In coöperation with the Army, one of the early objectives was the speedy establishment of telephone facilities to enable thousands of men in the Armed Forces abroad to call home. Further, international trade throughout the world, struggling toward revival and looking to the United States for vitally needed supplies, would be in urgent need of communications.

Soon after the landings on the Continent were made, a representative of the overseas service visited London, Rome, Paris, and Brussels to work out plans with the telephone people of the allied countries for the resumption of radio telephone services. At this time many of the governments with which plans were discussed were still in exile. In fact, Norway and later the Philippines actually ordered equipment before their countries were liberated. As soon as the enemy had been driven from their cities, France, Belgium, the Netherlands, and Denmark also arranged for new circuits.

The tale of the Norway negotiations gives a "behind-the-scene" glimpse of the ramifications and possible difficulties attendant upon setting up a new overseas circuit. During September, 1944, the Norwegian Government-in-Exile in London was first approached about proposed plans. At the time, the "V" bombs were hitting London heavily and, with their country still in German hands and victory not yet in sight, the Norwegian representatives were reluctant at first to make plans for service. Through the good offices of the American Ambassador to the Governments-in-Exile, however, an interview was secured with the Nor-

* See "Command Circuits," MAGAZINE, Summer 1946.

wegian Foreign Minister, who took an optimistic view, strongly favoring immediate negotiations for establishing direct connection with the United States. That official was Trygve Lie, little known then, but now well known throughout the post-war world as Secretary-General of the United Nations.

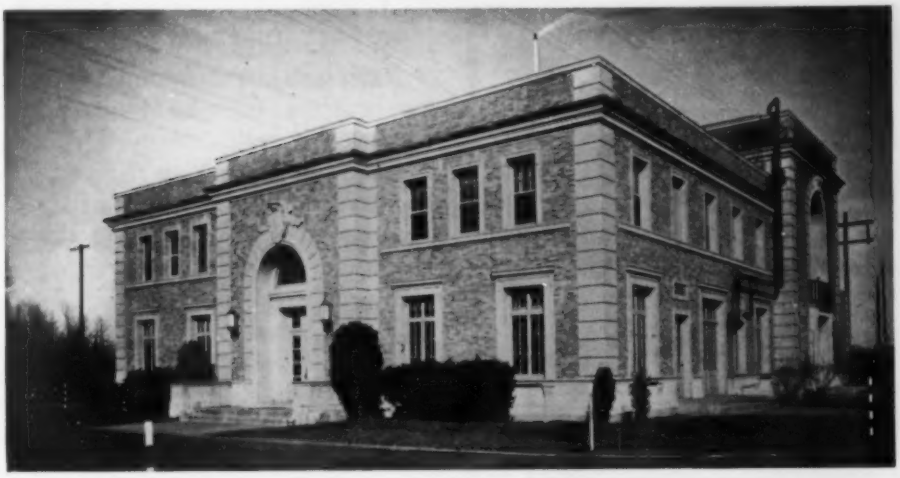
The next task was to convince the Norwegian Finance Minister of the soundness of the project. This was followed by a struggle to secure an early delivery date for the equipment in that particularly difficult period. Next, the Norwegians flew a naval commander to New York, where he was thoroughly instructed in the installation and maintenance of radio telephone equipment. Luckily, all went well, and soon after V–E Day the radio installation near Oslo was in progress. A Long Lines radio engineer flew up from Paris—where he had installed another new circuit to America for the French—and supervised the final Norwegian tests. The whole process moved smoothly, and the final results were completely successful.

What Is Involved in Opening a Foreign Circuit

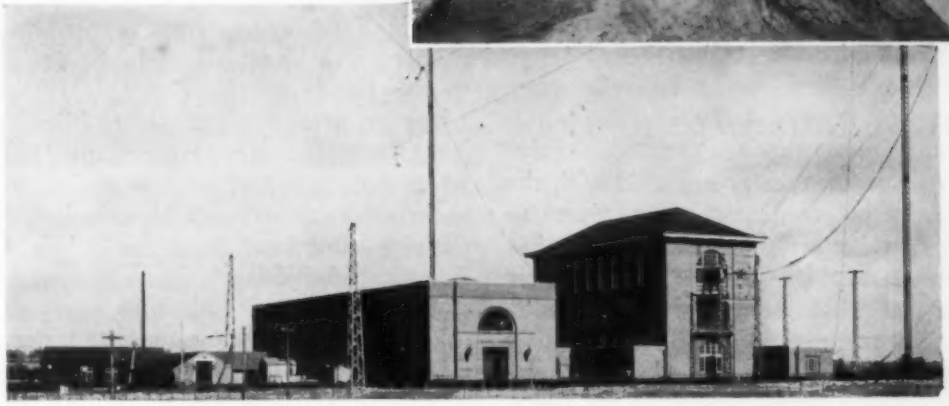
QUITE APART from its wartime overtones, the establishment of service with Norway presents factors always involved in opening a foreign service. At the American end, for example, transmitting, receiving, and control equipment must be installed and tested. In addition, a study of the crowded frequency spectrum must be made, and an application for new frequencies must be made to and a license to operate with the new country must be secured from the Federal Communications Commission. Negotiations with the foreign partner are required to determine rates and the division of revenues, and also to work out operating methods. Next, detailed operating procedures are sent abroad for study. As this work proceeds, the technicians are lining up the circuit for the use of the Traffic Department, completing over-all tests, and eliminating "bugs." Then the operators "meet" on the air to become acquainted with the different operating techniques of the new country, to insure a continuous flow of messages. Finally, after announcements to the press, the new service is established.

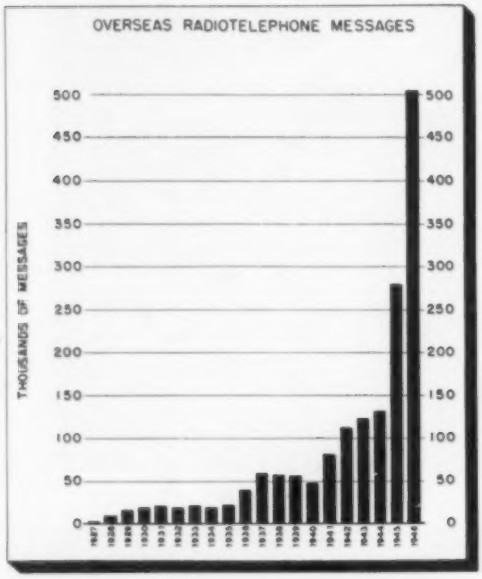
BUT PLANS do not always work out so smoothly. In some cases, the initial negotiations take months of persuasion and patience; sometimes the procurement of the equipment goes awry. On occasion, installations abroad have encountered difficulties and delay. Then too, foreign operators and technicians may need training. To this problem may be added the distance between the two terminals of the circuit, with differences in time, differences in language, and differences in operating technique. Yet, through the coöperation and comradeship which binds together communications people of all nations in a common endeavor, difficulties can be overcome and distances conquered.

Following the working out of such plans, and as soon as hostilities had ceased, radio telephone equipment abroad was rehabilitated or replaced, so that transatlantic and transpacific circuits could soon be established and



Above: The main building of the A. T. & T. Company's radio telephone transmitting station at Lawrenceville, N. J. At right: The transmitting station of the Companiá Radio Internacional do Brasil, near Rio de Janeiro. Below: The overseas radio telephone transmitting station of the British Post Office at Rugby, England





The 504,000 messages completed in 1946 compare with a pre-war maximum of 59,000 in 1937

overseas telephone service could once again meet the public demand for communication almost anywhere. Now, for example, the circuits with Hawaii and France number more than double the pre-war groups. Despite this increase, both routes are crowded with traffic. The circuits with Berne and Madrid—which continued during the war under restrictions—have been augmented by new facilities to meet the flow of unrestricted post-war traffic.

On the Heels of War

THE FIRST CIRCUIT restored with the European continent was that to Rome, due to the strange fact that the retreating German troops blew up the old-style massive high-powered transmitters in the Italian radio station—and by mistake left the relatively unimpressive modern short wave sets.

Paris was not so fortunate, since its transmitters for the United States were completely destroyed and even the building had to be replaced. However, two New York-Paris circuits were soon in operation, and now there are three.

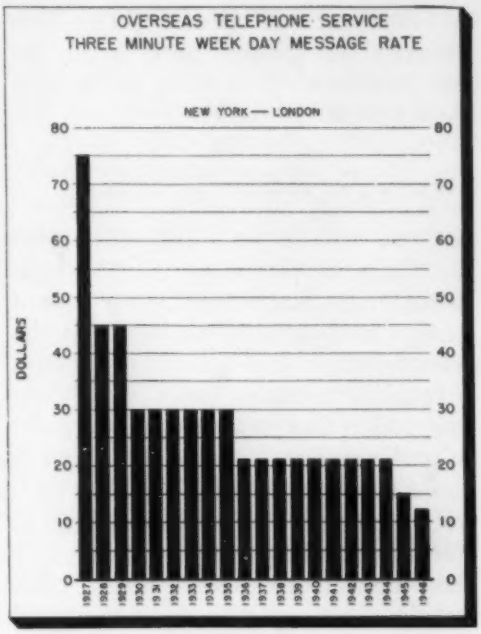
The Dutch did not regain Amsterdam until nearly the end of hostilities but, nevertheless, they were ready for service in short order. They did it by a clever stratagem. When the Germans invaded the Netherlands in 1940, the Dutch had just completed a new and modern transmitter. Just before the Germans arrived, it was dismantled, the various parts being specially marked and then put in a stockroom for "spare parts." There they stayed all during the war, with the Germans in control of the station. When they retreated, the Germans destroyed or took away all the assembled transmitters. But as soon as the enemy was out of sight, the Dutch started assembling the "spare parts." Soon two New York-Amsterdam circuits were in service.

Little Belgium, the first of the Europeans countries to be freed from Nazi rule, was most desirous of a direct connection with this country. So, in late 1944, soon after the country was liberated and just prior to the Battle of the Bulge, a Long Lines representative "hitch-hiked" into Brussels. The British military were not yet authorizing visits to their military area, which included the city—but a talk with the Belgians was vital if a circuit was to be speedily established. So, somehow or other, this telephone man found himself on a plane sitting among a load

of mail sacks for the American First Army, whose headquarters was at Charleroi—not far from Brussels. From the airfield he turned left instead of right and rode into Brussels on a British lorry.

TO FIND lodgings without British orders was a problem, particularly in a city on a combat basis with buzz bombs still coming over. Luckily, a few American Army officers were there and one of them, finding that the visitor was from the A. T. & T. Company, exclaimed, "Why, you work for me. I own two shares of A. T. & T. stock!" Then he insisted that the British Town Major assign a proper billet, "because I own part of the company this chap works for."

Negotiations with the Belgian Minister of Communications were speedily and agreeably concluded. Then came the problem of how to return to London. During the negotiations, by another stroke of luck, the company representative had met a high-ranking American officer who, before departing on a trip to the front, asked that a valuable lace tablecloth be delivered to his wife in Washington. It happened that this officer was entitled to a seat on any British plane, the only means of reaching London. By a bit of bluff, and with the help of the officer's sergeant, who was anxious to have his chief's present delivered, the British Transport Office in Brussels was talked into assigning the plane seat of the American Officer to the company representative. So he flew back to London literally on the "lace tablecloth." On landing at Croydon, however, he had to talk fast to explain to the British why he should be allowed to enter a country which, according to the records, he had never left!



Rates for overseas service have been reduced until $12 is now, with a few exceptions, the maximum charge for a 3-minute daytime call anywhere

Advances in the art of radio telephony have made possible substantially reduced rates. Over the years, rates have been lowered by successive steps from the original charge, in 1927, of $75.00 for a three-minute conversation between New York and London. In the last two years, under a world-wide rate plan, telephone users in the United States may talk for three minutes almost anywhere for $12.00 or less. For distances less than 3,000 miles, the rates are lower than the $12.00 figure; the rate from the U. S. mainland to Hawaii, for example, is $7.50 for a three-minute day call. In many cases, there are lower rates for night and Sunday service.

The "lace tablecloth" circuit into Brussels, established soon after the one to Norway, is now carrying a good volume of traffic.

Service for Soldiers Overseas

IN THE MEANTIME, anxious to give the G.I.s in Germany contact with home, the American Army asked Long Lines to provide overseas circuits.* How this was accomplished is familiar to many, so it is sufficient to say that for more than a year circuits have been operating between Frankfurt and New York for G.I. calls from the United States Zone in Germany, and the service has recently been opened to public use. Ultimately, the temporary equipment and operations in Germany will be replaced by a permanent set-up. Two circuits for G.I.s also were set up to operate with Austria, and they too will be opened to public service.

Since V–J Day, the Pacific circuits are once again speeding telephone messages. The single Australian circuit, which during the war continued to carry government traffic, has been increased to two. A new circuit has been opened with New Zealand, which before the war was not a part of the overseas network. Service to the Philippines has been restored with two circuits. Tokyo also has two channels to San Francisco—but so far the traffic is confined to G.I. calls.

Telephone service with China was suspended shortly after the Japanese invasion, nearly ten years ago. However, new equipment is being installed at Shanghai, and two circuits will be in service shortly. Arrangements have also been made to reëstablish connections with Java and the other Netherlands Indies as soon as conditions return to normal in those troubled islands.

Prior to the war there was no telephone service between this country and Moscow although unsuccessful test trials had been made on a route through various European terminals. In 1943, in the midst of the world battle, a direct New York-Moscow radio telephone circuit was set up after months of effort. Restricted to government calls during the war, this circuit operated several hours daily —and continued on this limited basis long after all restrictions had been removed from other overseas services.

In Russia, the telephone is not the commonplace that it is in the United States. This led to an amusing episode during the international communication conference held in Moscow last Fall. When he was about to leave, the A. T. and T. Company representative learned that the Soviet plane carrying him to Berlin would land at the Russian military airport in Soviet-occupied territory, which is twenty-five miles from the American Area. Just prior to his departure, the company man asked if he could telephone Berlin to have an American car meet him at the Soviet airfield, but the Soviet officials replied that there was only a military circuit to Berlin. Whereupon the American asked for a call to Long Lines Headquarters in New York. The call was put through quickly, and the telephone man in Moscow asked New York to telephone the Long Lines representative in Berlin to have a car at the Russian airfield. This 9000-mile call for a taxicab amused the Russians and probably established a record for calling a taxi.

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* See "Three-Minute Furloughs," MAGAZINE, Spring 1946.

Because of the increasing importance of communications between this country and the U.S.S.R., negotiations regarding this telephone link were held last fall in Moscow. These resulted in the opening of the service to public use without restrictions. Plans were also made to better the existing radio facilities, and these improvements were completed in time so that two circuits between Moscow and New York were available by the start of the Peace Conference.

Today the world telephone network has been restored to meet the greatly increased needs of the present day, and is much improved in capacity, diversity, and reliability over its predecessor of pre-war days. Now there are nearly sixty overseas circuits on more than forty direct routes in this service. Traffic across the oceans has reached a new high, having increased tenfold over the pre-war figure. In 1946, overseas telephone service put through more than 500,000 messages.

In 1947, world trade is only beginning to recover from the disrupting influences of the war. In war-torn areas, the machinery of commerce has been destroyed. World travel is limited by an insufficiency of planes and ships, and world commerce by lack of materials. Yet, despite these deterring factors, as a glance at the chart on page 48 shows, the trend of overseas traffic indicates vigorous growth.

WHAT of the future of overseas telephone service? The world-wide network of speech channels will be further extended to remote countries, and its message-carrying capacity will be supplemented and strengthened. Existing post-war overseas telephone facilities, which provide a much more substantial structure to furnish reliable service than the pre-war network, are ready to meet the challenge of future public demand.

In its twentieth anniversary year, overseas telephone service is passing from youth to manhood, from the developmental stage into general public acceptance as a vitally important social and economic instrument. Through planning, research, development, and common endeavor, it is the aim of those engaged in this enterprise to provide a service even faster, more reliable and—if possible—lower in cost. The task ahead is to advance voice frontiers still farther, by making overseas service more useful to more people in more countries.

After the recent observance of the twentieth anniversary of Bell System overseas telephone service, at which newspaper reporters conversed with various overseas points, one reporter wrote of his experience: "In fact, it went so easily it was as simple as—as—as making a telephone call."

That little black instrument at your elbow is Aladdin's lamp—by whose magic you can talk "with the rest of the known world." Reach out, lift the receiver, say the proper words, and lo! in a short time there is a voice from Rabaul, Paris, Honolulu, Moscow, or Rio.

Want to try it? It's just "as simple as—as—as making a telephone call."

Pioneer Chapters and Bell System Companies Undertake a Joint Project for the Compilation and Publication of the Story of the Start and Growth of Telephony

Preparing Histories of the Telephone Business

Samuel T. Cushing

IN THE YEARS since Mr. Bell shouted "Mr. Watson, come here! I want you!" into an experimental telephone transmitter and Tom Watson came a-running, it has probably occurred to a great many people that it would be a splendid thing to have a comprehensive and accurate history of the beginnings and development of the telephone business. Some of them moved toward it, saving mementos and keeping records of events. But not for many decades was there any major effort to compile the facts and set them forth in permanent form as the history of a telephone company. Not, in fact, until 1932.

In that year Albert B. Elias was President of the Southwestern Bell Telephone Company. He was Senior Vice President of the Telephone Pioneers of America—and was to be president the following year. He had for some years sensed the need for a thorough-going history of the company.

That combination clicked. As Mr. Elias saw the need, so he saw how the Pioneers in the Southwestern Company could help to fill it. He asked the Pioneer chapters there to set about gathering historical data, and for a number of years they did so—with zest and zeal.

There was other information, corporate and statistical, which was a matter of record—and no less a part of history because it was readily available.

After some years the collecting and research were ended, and all the material was pooled, ready for the next step—compilation.

Here the Southwestern Company did more pioneering. For it recognized that gathering historical facts and writing history were two different things, and that the latter was a

job for a specialist. Thereupon the then editor of the company magazine, the *Southwestern Telephone News,* was detached from that position and given the assignment of writing, from the assembled material, the history of the Southwestern Company.

The product was a 360-page typewritten draft, bound in book form and placed in the hands of Pioneers and other Southwestern Company people for comment and suggestion upon both what the book says and the factual accuracy with which it says it.

That is its present status.* The status of the historian, Mr. Ralph Mooney, is now that of Historical Librarian of the American Telephone and Telegraph Company.

THE SOUTHWESTERN'S was not the only company history being written at that time. Independently, and without knowledge of the other effort, the Michigan Bell Telephone Company was also working on such a project. Before the war, historical compilation had been carried to the point where the record of corporate activities was completed and much of the history of the exchanges had been developed.

THE WAR interrupted still another and broader approach to this general topic of telephone company history.

In 1940 the Public Relations and Personnel Relations Departments of the A. T. & T. Company began to think seriously about the lack of basic and comprehensive company histories; and, on the basis of the successful Southwestern Company enterprise, they began to think about the Telephone Pioneer organization in connection with remedying that lack.

Members of the Pioneer chapter or chapters in each Associated Company appeared to be people who would have logical interest in collecting information about early telephone days. It appeared equally logical that the company should participate in this activity, since Pioneers—however keen their antiquarian interest—are not inherently either historians or accomplished writers.

This was the general import of the proposal which was made to the executive committee of the Pioneers' Association. That body approved the project as a joint undertaking of the Pioneer groups and the telephone companies, and at the 1941 meeting of the Pioneer General Assembly in Chicago it was placed before the representatives of the Pioneer chapters for their consideration as a coöperative endeavor with their respective companies.

A pamphlet which described the plan in detail was distributed at the meeting.

As outlined, the plan provided that a Pioneer chapter (or chapters in cooperation, in companies having more than one) would do the basic spade work of gathering all available facts on the beginnings and development —right down to the smallest exchange—of the telephone business in its territory. This would include garnering information from older and retired employees by personal interview or the use of questionnaires, from the various company records available, from old newspapers and magazines, and from any other

* See "The Telephone Pioneers of America," MAGAZINE, June 1943.

sources. In this very considerable enterprise the Pioneers would receive clerical and typing assistance from the company.

When this comprehensive collection of facts had been assembled, it would be turned over to a writer assigned by the Public Relations Department, who would proceed to develop it into a history of the company.

The consensus at Chicago was that there would be great value in the production of such histories. There would be assembled authentic facts about a company—its inception, its early days and early trials, its development since—all in one book. Not alone for speakers and writers on public relations matters, but for instances of public inquiry and for reference with regard to various phases of the business, the facts would be conveniently available. There would be, moreover, a real educational value in the volume—particularly for the younger employees.

After the Chicago meeting, the Public Relations and Personnel Relations Departments of A. T. & T. informed their colleagues in the Associated Companies of the matter and bespoke their assistance to the Pioneers in the new undertaking.

WITH THE historical project thus launched at Chicago in September 1941, some Pioneer chapters moved immediately to take up the work, and there were indications that there would be hearty coöperation from the companies. But December 7, 1941, soon came, and the country was plunged into war. Because of the pressure of war work, many companies were unable to lend the assistance they otherwise would have, and many of the chapters had to defer undertaking the work on company histories. Some, however, found ways and people to carry on the work; and a few chapters, with company coöperation, made good progress even during the war period.

Since the war's end there has been a considerable increase in the work, and it now appears that there will soon be very general resumption of the undertakings. Meanwhile, it is possible to report the development of some company histories on which considerable progress has been made.

The history of the Southern New England Telephone Company is practically completed, and the account of how it was written appears in the following pages of this issue. The Southwestern Bell history previously mentioned is in the hands of a writer who will carry it to completion, helped by the comments which have been made on the preliminary draft. The material for the Michigan Bell history, also mentioned earlier, is in typed form and is awaiting the skilled hand of a historical writer who will complete the exchange record and bring the corporate history up to date.

One company, after considerable voluntary work on the part of the three Pioneer chapters in its territory, has assigned a full-time employee in each of its three areas to head the historical committees of the respective chapters. Gathering of information has proceeded to the point that a writer has been engaged by the company to shape the history into final form.

In another company with three chapters, much historical informa-

tion had been gathered by the chapters, and more is being obtained. In addition, a special committee has been established at company headquarters to secure historical information from the company's files and records and to act as a general board of review. A basic outline has been agreed upon for the history, and a writer is already engaged in working over the material collected so far.

A company with one Pioneer chapter has assigned the secretary of the chapter to develop the company history in connection with his Pioneer work. Under this arrangement, an outline has been set up, much of the story is already written, and completion of the whole work is expected in 1947.

In another company, the secretary of the Pioneer chapter also has the joint historical-secretarial assignment and a number of chapters of the company history have been written. Of particular note here is the extensive historical library which has been set up by the chapter, with company cooperation. Company engineering records, corporate statistics and data, files of communications magazines, information gathered from "old-timers," clippings from newspapers, and a host of other items have been gathered together. Attractively bound, adequately cross-indexed, and housed in steel files and glass-front bookcases which may be locked as desired, this material provides a comprehensive reference source for those engaged in developing the history.

In yet other places, much of this preliminary work has been done: many questionnaires and records of interviews are on hand as source material; many clippings, manuscripts, and photographs of historical value have been accumulated; and further promotion of the work is being organized by the chapters and the companies. In some of the companies, historical booklets prepared for various occasions—anniversaries, for example—already contain many valuable historical facts.

As is no doubt evident, the purpose of this report is not merely to describe the process of developing this historical work but to cite encouraging progress in many aspects of the task. The fact that company histories will be of great value and interest to the people in the telephone business is being recognized in an increasing degree. It may be expected, therefore, that more and more of the chapters and companies will be including this project in their programs. Thus we move forward toward completing the picture which is being drawn of the telephone business from its humble beginnings in the 1870s to the present day.

The Present Southern New England Company Is Successor To the First Organization in the World which Operated A Commercial Telephone Exchange

Preparing a History of the Telephone in Connecticut

Edward M. Foley, Jr.

IF A PASSER-BY had happened to look through the plain glass window of a little ground-floor office in the Boardman Building in New Haven, Conn., at precisely noon on Tuesday, January 15, 1878, he might have seen a curious sight.

In the midst of an unornamented room cluttered with tools, wires, and small packing cases, and exhibiting on the wall a large, square board equipped with some kind of clock-dial contraption, three men were seated in "lawyer's" chairs about a plain kitchen table. All were in their early forties, and appeared at the moment to be absorbed in a serious ritual.

One, who bore a striking resemblance to Abraham Lincoln, sat on the edge of his chair, stiff and uneasy.

The second seemed to be engaged in surveying the other two shrewdly.

The third, a lean, keen-eyed, soldierly man, did most of the talking, now and then gesturing with nervous intensity. When he gestured, however, he used only his right hand, for his left arm hung limp at his side and he kept his left hand always in his coat pocket.

Sometimes, as the discussion waxed hot, he turned to appeal first to one man then to the other. Sometimes he pointed to the clock-dial contraption on the wall. Sometimes he read from a sheet of paper before him. Sometimes, when matters seemed to come to a head, he took a vote, and as each man raised his hand he recorded the result on the back of one of the blank telegraph forms which lay at his elbow. Then finally their business seemed to be finished.

What had been accomplished when the three men rose from that table was the formation of the District Telephone Company of New Haven, which thirteen days later was to open

in that room the first commercial telephone exchange in the world.

The men had been its three incorporators: Walter Lewis, superintendent of the New Haven Clock Company, who, with more than a little misgiving, had just put $600 of his life's savings into the venture, not so much as an investment as to help his brother-in-law, Herrick P. Frost, one of the officers of the new company; William H. Hayward of Norwalk, who represented the Bell interests as "Special Agent for Western Connecticut," and who was dickering for stock rights in return for the franchise; and George W. Coy, disabled Civil War veteran, telegraph manager, and inventor of the clock-dial switchboard, whose dream it had been for many months to found a commercial telephone exchange.

This was the first scene in the story which was eventually to unfold into the history of the telephone industry of Connecticut and of the present Southern New England Telephone Company. This was one of the many scenes which had to be recreated by the Telephone Pioneers of Morris F. Tyler Chapter as during the last three years they have gone about the task of preparing the history of their company—a history which is now in virtually final textual form and will be ready for publication within the present year.

The story of the preparation of this history is almost as interesting as the history itself. But first a word about how the work came to be undertaken at all.

IN ONE SENSE the Southern New England Company has always been preparing to write its history; for almost from the beginning, various individuals have been collecting letters, memoranda, photographs, and other mementos with this end in view. The company magazine, *The Telephone Bulletin,* since its founding in 1907 has constantly published historical reminiscences; and since 1911 the constitution of the Telephone Pioneers of America, with its firm emphasis on historical aims, has fostered this tendency.

More recently, the example of the historical project of the Southwestern Bell Telephone Company, launched in 1932 by its then President A. B. Elias, one-time dynamic leader of the Telephone Pioneers, has also been a stimulus.

Getting the Go-ahead

BUT FOR THE Southern New England the incentive moment, in so far as casting its history into a single authoritative volume is concerned, came in 1941 when the Telephone Pioneers at their General Assembly in Chicago officially recommended that all Bell affiliates prepare individual company histories.

With this recommendation before them, the Pioneers of Tyler Chapter immediately formed a historical committee and commenced work in earnest. The company guaranteed all necesary expenses, but the method of procedure was left entirely to the Pioneers.

The committee, represented by two of its members—ex-President Harry C. Knight and ex-Treasurer Ellis B. Baker, Jr.—drew up an outline of the scope of the work, and the General Information Department assisted

GEORGE WILLARD COY

A professional soldier, he came out of the Civil War with a disabled left arm, learned telegraphy, and later invented the first commercial telephone switchboard

WALTER LEWIS

He was first President of the District Telephone Company of New Haven—the first company in the world to operate a commercial telephone exchange

by sending various questionnaires to older pioneers. Returns, because of wartime conditions, came in slowly; but by 1943 so much material had been collected that the committee felt it was ready to engage a professional historical writer to put the work in final textual form.

THROUGH CONTACT with Yale University, one was found; and, in collaboration with the committee, he commenced writing early in 1944—proceeding, however, as he preferred, only on a part-time basis. Since then the work has progressed steadily, and as in its preparation almost every problem of telephone history has been met if not solved, it may be of some value to other companies contemplating histories to give an account of the steps in its composition.

The first major problem was where the story should begin.

The possibility of a single general introduction for all company histories was considered; but as the Southern New England boasted in its territory the first social, the first mutual, and the first commercial exchanges in the world, and as the history of these events went back to the early part of 1877, it was decided to go back a little further and begin with the invention of the telephone.

Subsequent experience also showed that no generalized history of the parent company would have served as a preface, since the progress of the various parent companies was intimately connected with that of the Southern New England and mutations in one caused mutations in the other.

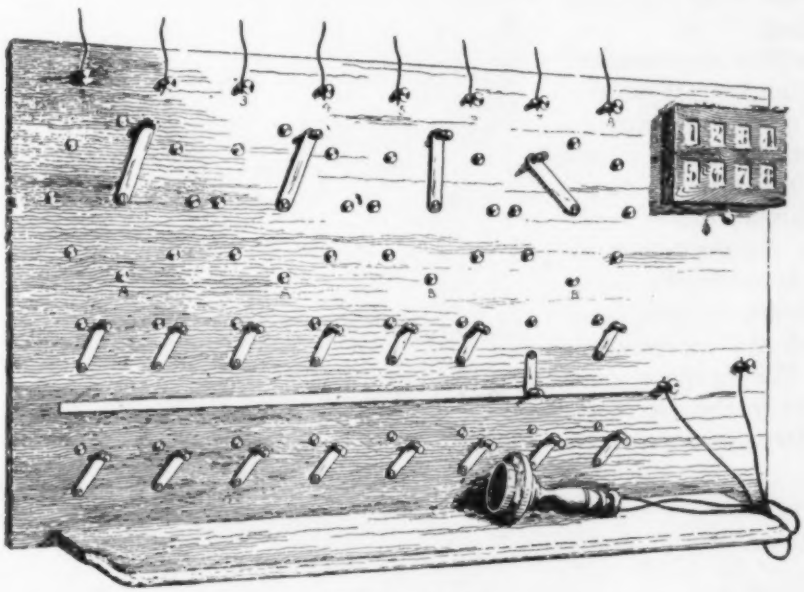
The corollary would seem to be, therefore, that any telephone company wishing to tell its own story properly must in some degree weave in the entire story of the industry.

The second problem was the length and scope of the book.

The historian, after surveying the material, suggested a work of 400 printed pages with a 400-word page, equal to 160,000 words, or between 500 and 600 typewritten pages. The general line of the story, it was agreed, should be the corporate history of the company and its predecessors, from the beginning up to the present time, embellished with a sufficient number of eyewitness accounts, personal anecdotes, and human-interest stories to give it life. Needless to say, these latter were eventually quoted *verbatim,* not only to retain their original flavor but to indicate that they were only anecdotes; for in the main body of the text the chief emphasis was on authenticity, and no amount of labor was spared to verify and document every statement of fact.

The greatest problem of all was how many persons should be mentioned in the story and how much space should be given to each one.

It was a delicate matter, and seemed a formidable problem, but it was solved, at the suggestion of the historian, by the simple device of adding biographical footnotes. Originally it had been planned to exclude nearly all footnotes, but the historian pointed out that the history of a telephone company is a form of local history and should be approached as such. In works of this kind, people are as important as events, and family history is one of the primary aims.

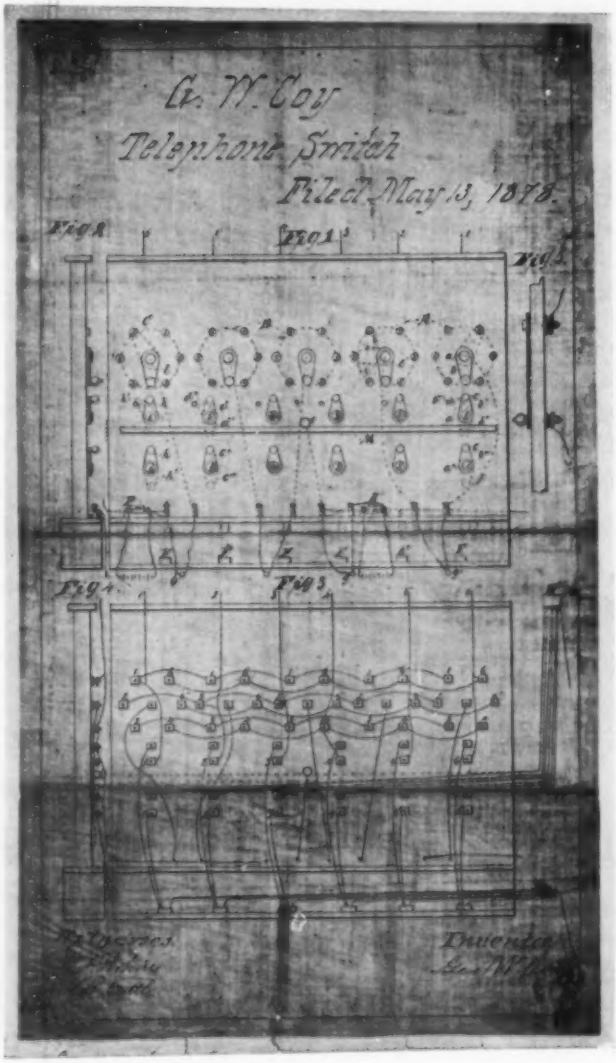


The granddaddy of them all. The world's first commercial switchboard as sketched by its inventor, George W. Coy. This invaluable drawing was made in 1905 at the request of a historically-minded pioneer. The original board was destroyed in 1879

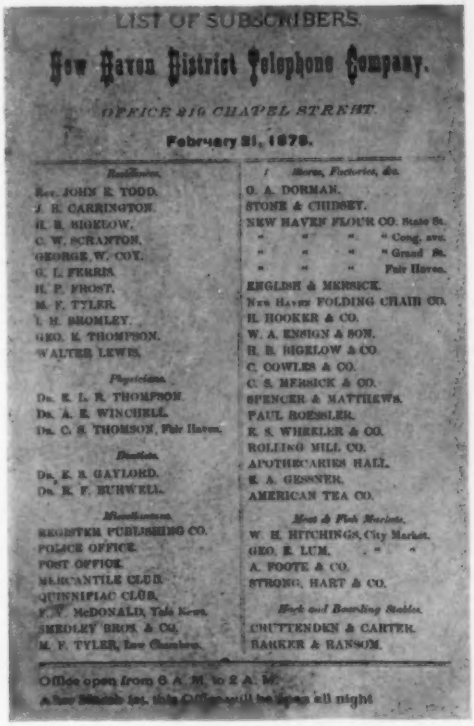
The force of this argument was allowed, and biographical footnotes —genealogical footnotes, they might be called, as they included everything from birth to death and from parents to children—were prepared for the founders of the company, for distinguished early pioneers of any rank, and for all later officers of the company down to the heads of the trifunctional organization. Similarly directors were given a brief biographical footnote of four or five lines, including dates, principal occupations and a few other pertinent facts sufficient to identify them thoroughly.

THIS biographical policy once established, the historian and the committee went to work on the main text.

The first step was to survey and catalogue the basic corporate records and other source materials, including the directors' minutes of all companies, the general managers' letter-books, early directories, ledgers, and files of old correspondence. Where there were gaps, as in the directory files, attempts were made to fill them up by advertising in the newspapers and buying old copies. Orders were also placed early with booksellers for rare magazines containing articles touching on the early days, as these orders usually took many months to fill. The corporate records, however, presented little difficulty, as the company was fortunate in having a complete run of directors' minutes from the beginning. To save wear and tear on some of



How it worked: a circuit diagram of the world's first switchboard, from a patent application never before published. Had this patent been granted, it would have been worth a fortune



LIST OF SUBSCRIBERS.

New Haven District Telephone Company.

OFFICE 219 CHAPEL STREET.

February 21, 1878.

Residences.

Rev. JOHN E. TODD.
J. H. CARRINGTON.
H. B. BIGELOW.
C. W. SCRANTON.
GEORGE W. COY.
C. L. FERRIS.
H. P. FROST.
M. F. TYLER.
I. H. BROMLEY.
GEO. E. THOMPSON.
WALTER LEWIS.

Physicians.

Dr. E. L. R. THOMPSON.
Dr. A. E. WINCHELL.
Dr. C. S. THOMSON, Fair Haven.

Dentists.

Dr. E. S. GAYLORD.
Dr. E. F. BURWELL.

Miscellaneous.

REGISTER PUBLISHING CO.
POLICE OFFICE.
POST OFFICE.
MERCANTILE CLUB.
QUINNIPIAC CLUB.
F. V. McDONALD, Tele News.
SMEDLEY BROS. & CO.
M. F. TYLER, Law Chambers.

Stores, Factories, &c.

O. A. DORMAN.
STONE & CHIDSEY.
NEW HAVEN FLOUR CO. State St.
" " " " Cong. ave.
" " " " Grand St.
" " " Fair Haven.
ENGLISH & MERRICK.
New Haven FOLDING CHAIR CO.
H. HOOKER & CO.
W. A. ENSIGN & SON.
H. B. BIGELOW & CO.
C. COWLES & CO.
C. S. MERRICK & CO.
SPENCER & MATTHEWS.
PAUL ROESSLER.
E. S. WHEELER & CO.
ROLLING MILL CO.
APOTHECARIES HALL.
E. A. GESSNER.
AMERICAN TEA CO.

Meat & Fish Markets.

W. H. HITCHINGS, City Market.
GEO. E. LUM, " "
A. FOOTE & CO.
STRONG, HART & CO.

Hack and Boarding Stables.

CRUTTENDEN & CARTER.
BARKER & RANSOM.

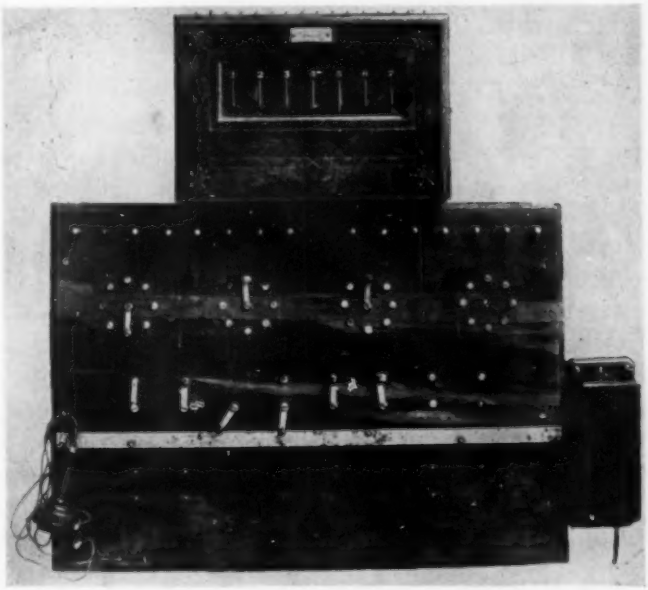
Office open from 6 A. M. to 2 A. M.
A fee [illegible] for, this Office will be open all night

Above: The world's first telephone directory. Subscribers at this time were called by name, not number

the earlier documents, photostats were made.

The next step was to interview some of the oldest living pioneers and get their stories before it was too late. Rapidly as this was done, however, the results were not what they might have been if the project had been started ten years earlier. Few of the real old-timers were left—only two, in fact, could claim to have seen the first commercial exchange in the world, and their accounts did not agree. To complicate matters further, a third old resident, not a telephone man, gave an entirely different description of the office. By the time the historian had located blueprints of the building, got the original ground plan reconstructed, and had a rough model made in order to settle the dispute, two of his chief informants had died. The events surrounding this incident constitute the most crushing disappointment connected with the entire project, for what has been lost in this case is absolutely irreplaceable.

WHAT the difficulties of research have been and how some of them have been overcome we may perhaps illus-



Old timer. The Meriden, Connecticut, switchboard, first placed in operation on January 31, 1878. Described by Coy as a "reproduction" of his original board, it is now in the Bell System Historical Museum at the Bell Telephone Laboratories

trate by going back to the little scene with which we began—the formation of the District Telephone Company of New Haven.

For the physical setting of that event we have as sources the personal recollections of the room supplied by the three informants above. They do not agree on the location of the door and the switchboard, but they do agree on the kitchen table and the chairs! The existence of the tools, wires, and straw-packed boxes of telephones we have ascertained from contemporary letters by Coy. The general appearance of the building we know, for it is still standing, though greatly altered. But we cannot find a photograph of what it looked like either inside or out in 1878.

OF THE DATE and the time of the meeting we are sure, for we still have the little school composition notebook in which Coy wrote the original minutes. We also have the blank telegraph forms on which he took notes.

The attitudes of the men—their hopes and fears—we can reconstruct from their letters and from a brief account of the founding of the exchange which Coy wrote in 1905 at the request of General Agent Frederick Parker Lewis, one of those truly devoted pioneers without whose quiet, unsung labors of collection and preservation almost no Connecticut telephone history could be written today.

Of the three men in the scene, we know much about two, nothing about the third. When we began, all three were little more than names. We consulted old newspapers for obituaries—the Yale Library was fortunately close by—wrote to Civil War veterans' organizations, searched public archives, and, when these failed, tried to locate living relatives. It all took months of time. Finally we found Lewis's granddaughter in Long Island and from her got a biography and a good photograph. We had a photograph of Coy, but we got a better one from his son who, as it turned out, lived only ten miles from New Haven. However, it took us a long time to find him, and we wrote a good many letters and ran down a good many false leads before we did. We finally located him through the descendant of another pioneer, and through him we located others.

In fact, before we got through, we began to realize that nearly everybody in the local telephone business was somehow related to nearly everybody else and that they in turn were related to half the people in Connecticut. We thought it was a good thing for us to find it out—it reminded us of just how much a family business the telephone business is—and we think that eventually it will be a good thing for the people of Connecticut.

OF WILLIAM H. HAYWARD, however, we have been able to learn nothing. We do not know where he was born, where he died, or what he looked like. He is the one character left in our story—out of some hundred and fifty names to which we have given biographical notice—whom we have been unable to identify. All the others we have found, some by getting their death dates and searching their obituaries in the newspapers, some by writing to relatives, some, and those very few, from biographical dictionaries. But where

we have used county histories or other local accounts we have usually verified dates by writing for birth and death certificates, for we have found there is a great deal of error even in standard works.

It has been the same with facts pertaining to the more formal aspects of company history. We have had to dig, and dig deep, and not take the first nugget that came along and call it gold. But it has been well worth while. The story of the struggle to survive and progress during the early years has been written in more detail than the history of the last twenty-five years of our growth. Our best results, our most interesting anecdotes, our most penetrating illuminations of company history, have usually come only after the longest search. But we have learned that the significant fact is always somewhere to be found, and that it is always

THE DISTRICT MESSENGER.

While we have many important demands upon all parts of the force, a great number of the calls are for messengers. It is hard to imagine an emergency, either great or trifling, in which this corps cannot, at very small cost, be of great assistance. They can be made to take the place of extra and costly servants of all sorts. They are uniformly polite, obliging and intelligent, quick-witted, capable of making purchases and bringing back change without "losing" any. They have greater strength and endurance than the ordinary house-servant, can go safely to neighborhoods and on duties in which a female domestic would be out of place, can give you as *much* assistance as you may require, and for the longest or shortest time, and subject you only to payment for the time actually consumed. If you need several messengers instead of one, they can be obtained with equal ease and speed.

It is a noteworthy fact that the messengers of this company are capable of *hurrying* and even of *running*. A single comparison of the time occupied by them and by a servant or ordinary errand boy in going the same distance, will astonish the employer of even most satisfactory help, while the intelligence, presence of mind and business sense of our messengers is such as cannot fairly be expected of any one not specially trained to such a business.

It is impossible to make a list of the purposes for which our messengers may be called, and equally hard to remember what they can *not* do. We therefore ask attention to the following list of demands (besides the ordinary one of carrying letters and messages) which *have* been fulfilled: To pay bill—to drug store for medicines—with check and answer—Young Men's Institute for books—for doctor and nurse—for two satchels—for umbrella—for butter—deliver package and collect money—for theater tickets—for cigars—in search of a husband—to hold a horse—to distribute handbills—for valise—for doctor—for groceries—to distribute cards—to go to a fair—to pay gas bill—for a coach—to search for a carpet layer—to Redcliffe's for a lobster salad—to return umbrella—to hospital for medicine—to church with umbrella—to drive a horse to stable—to Ferry's for ice cream—to carry manuscript to newspaper office—for shoes—for dry goods—for hymn book—to wheel baby carriage—for a plaster—for a cloak—to escort lady and child to depot—for milk— for wine—for a minister—for fish—for carpet bag—to collect bills—for shirts—for tobacco—to pawnbroker's—to take child to its grandmother's—to carry two boxes silver ware—to obtain a servant—to attend door-bell four hours—to deliver hats for manufacturer—to deliver wedding cards—for chicken salad—to buy bouquet—to serve a process—to buy a chicken—to mind an office—borrow wash-boiler—to make deposit in bank—to get lady's watch repaired—for bird seed—to distribute election tickets—to buy seats in drawing-room car—to attend a bar—to trace property left in horse car—for a musician—to get check certified—to express office—for a pail of lager—to buy fruit—to pay tax-bill—to carry package anywhere—to several doctors—for barber to shave sick man—for mineral waters—to church with flowers—for nurse—to market for meat—to bring a notary public—to take child out for a walk—for sleeping car section—to send telegram—to find a plumber—for lunch to be sent to residence—for a demijohn of whiskey—to dressmaker—to find man to clean stove—to bring children from school during a heavy rain—to Gallagher for cigars—etc., etc.

Customer appeal in the old days. A page from the directory of the Connecticut District Telephone Company, November, 1878

worth the extra effort required to find it.

All this may imply that we have labored to attain accuracy at the expense of interest, but this is not so. We have everywhere striven for readability, for the personal touch, for an emphasis upon people rather than things. Some of the salty phrases of the old pioneers have been well worth preserving, and we have preserved them.

One old-timer in describing the setting of poles in the early days averred that "they were usually set by hand but that when the going got tough they were sometimes lifted into place by sheer force of the foreman's language." He added that when a lineman was caught stringing wires on houses without permission "the order of retreat usually depended on the size of the man that caught him."

Similarly an anecdote preserved by Frederick Parker Lewis gives us a lively—or the reverse—picture of Herrick Frost, one of the founders. Frost, as Lewis recalls, was a short, stocky man with black hair and a full beard who, although he dressed plainly, was seldom without his high silk hat even while in the office. The hat was an index of Frost's mood. If perched upon the back of his head, all was well; if pulled down over his eyes, this barometer indicated stormy weather.

But Frost had a well developed

Where it all started: the Boardman Building (right), New Haven, Connecticut. In the store just back of the penny scale the first commercial exchange in the world was opened on January 28, 1878. This photograph, from the Arnold G. Dana collection, was taken in the 'nineties, looking westward on Chapel Street

sense of humor which he could use to suit his purposes. His favorite attitude was one of deep reflection, with his feet on his desk and his silk hat down over his eyes. When he assumed this attitude, people passing him or even speaking to him got no notice or response. A visitor, on one such occasion, half recognizing him, but still a bit uncertain, approached and asked if Mr. Frost were in the office. So deep was his abstraction that Frost shook his head negatively. With a somewhat incredulous look, the visitor left.

These are the lighter touches, but they are not the principal story.

What that consists of is a clear-cut picture of the organic growth of a company, a system, and a service. It is a story of a part of American life, of a great technological and business achievement, and of a contribution to the industrial might of the Nation. It is a story of small courageous beginnings, of difficulties met and conquered, of personal heroism, and of individual character in action both in the office and the field. It is a worthy tribute to men and women who deserve to be long remembered. The success of our enterprise was won in part by earlier pioneers who paid for it a much higher price than we have.

Summing up, it is the living tradition of the telephone business in tan-

Before the curtain rose: the corner of State and Chapel streets, New Haven, in the early 'seventies. The Boardman Building, site of the first commercial exchange, later replaced the structure to the left. On August 1, 1878, the exchange moved to the upper floor of the Brewster Building. The tower in the rear is that of the old New Haven railroad station

gible form, a work for the old to peruse and remember, for the young to absorb and emulate. It is at once a monument and milestone, pointing the way we have come and the way we shall go. For as there were pioneers of old, so are there pioneers today, and so will there be pioneers hereafter; and it is our duty and privilege to honor those who went before as we ourselves may wish to be honored by those who shall follow us.

It is with this thought in mind that the Telephone Pioneers of Connecticut have prepared this history of their company.

From Edinburgh

UNDOUBTEDLY the longest talk of the centennial ceremonies—geographically speaking—was that of the Lord Provost of Edinburgh, the Rt. Hon. Sir John Falconer, who spoke by transatlantic telephone with Mr. Frederick Johnson, President of the Bell Telephone Company of Canada. Sir John said in part:

"On behalf of the City of Edinburgh it is a pleasure to greet you in connection with the 100th anniversary of the birth of one of this city's most distinguished sons. It is fitting, too, that my greetings should be carried by the telephone which the genius of Alexander Graham Bell made possible. . . .

"Edinburgh is proud to join in tribute to a native son who was not only a great inventor, but a great humanitarian. Genius, Mr. Johnson, is a major Scottish export. We in Scotland are proud of the native talents of Alexander Graham Bell and of his sterling character; and we are proud to think that a Scottish education contributed somewhat to his success. . . .

"If international telephone communication has not brought peace among all nations, it has at least bound closer together all men of good will, scattered though they may be in all parts of the world. . . .

"On behalf of the people of Edinburgh, I am glad to have had the opportunity, not only of paying tribute to Alexander Graham Bell, but of speaking to you in the Dominion of Canada."

Who's Who & What's What

in This Issue

AN ISSUE which observes the centennial of the birth of Alexander Graham Bell, twenty-five years of its own continuous publication, and twenty years of overseas telephone service may quite properly be designated an "anniversary issue."

As is fitting, two distinguished Bell System officials lead off our report of the Bell centennial observance: WALTER S. GIFFORD, President of the American Telephone and Telegraph Company, and DR. OLIVER E. BUCKLEY, President of the Bell Telephone Laboratories.

JOINING the Bell System in 1904, it took Mr. Gifford just under 21 years to go from payroll clerk in the Western Electric Company to the System's top job: President of A. T. & T. Company—even with time out for an important part in World War I in civilian executive capacities. More than twenty-five years later, in the recent war, he was Chairman of the Industry Advisory Committee of the Board of War Communications.

Concerning Mr. Gifford's many charitable, educational, and scientific interests it is perhaps sufficient to cite that a few years ago he received the gold medal of the National Institute of Social Sciences in recognition of his services "as Director of the Council of National Defense; President of the Charity Organization Society of New York [now the Community Service Society]; Trustee of Johns Hopkins University, General Education Board, Carnegie Institution of Washington; Director of the President's Organization on Unemployment Relief; President of the American Telephone and Telegraph Company, the greatest non-governmental organized service in the United States; and as trustee of numerous educational and scientific foundations."

Mr. Gifford's most recent appearance in this MAGAZINE was in the issue for Autumn 1944, which carried his address to the U. S. Independent Telephone Association on October 11 of that year.

DR. BUCKLEY entered the Bell System in 1914 as a research physicist; became assistant director of research of the Laboratories in 1927, and director in 1933; was made executive vice president in 1936; and was elected president in 1940. During the previous war he had charge of the U. S. Signal Corps laboratory in Paris, with the rank of Major. He is a fellow of several scientific and engineering societies, and is a member of the National Academy of Sciences, the American Philosophical Society, the National Inventors' Council, and the Research Board for National Security. His previous contribution to this MAGAZINE was his stirring "Bell Laboratories in the War," in the Winter 1944–45 issue.

A DECADE AGO, when the anniversary of overseas radio telephone service was but the tenth, WILLIAM G. THOMPSON contributed to the BELL TELEPHONE QUARTERLY an article called "Making Neighbors of Nations." His "America Is Calling," in this issue, is not just an account of the following 10 years' extension of overseas circuits but a yarn of war-time expedients and post-war recovery as well as an augury of even greater developments a-coming. One of the few state secrets to escape from behind the iron curtain is that it was he who called from Moscow to Berlin via New York last fall to summon a taxi.

William G. Thompson

Samuel T. Cushing

Edward M. Foley, Jr.

Mr. Thompson joined the Long Lines Department in New York in 1914 as a rate clerk, and by 1923 he had become commercial engineer. Following a brief period in the O. & E. Department of A. T. & T. he returned to Long Lines in 1929 as assistant to the general manager, with duties related to overseas and ship-to-shore radio telephone service, contacts with foreign countries, and other new developments. In 1940 he was appointed assistant vice president and made responsible for overseas service, and in 1944 he was made head of an executive staff which includes those duties among others.

Mr. Thompson received a War Department citation "for initiating the development of the multi-channel radio teletypewriter system and for directing the training of military personnel in the installation and operation of this equipment"; and takes scarcely less pride in having been able, along with such wartime responsibilities, to serve for five years as chairman of the Scarsdale-Larchmont draft board.

AN ARTICLE by SAMUEL T. CUSHING entitled "The Telephone Pioneers of America," published in this MAGAZINE for June 1943, carried in its subtitle the phrase "This Group of Telephone Men and Women Forms a Strong Link between Achievements of the Past and Greater Accomplishments Still to Come." The Pioneers are the logical people, it is clear, to cherish, explore, and bring forth the facts of telephone history and make them available to telephone companies for compilation and publication. How such a general program is progressing in the Bell System is the theme of Mr. Cushing's contribution to this issue.

In plant work with the New England Telephone and Telegraph Company from 1906 to 1927, he was on the staff of the plant operation results engineer of the A. T. & T. Company for the next dozen years until, in 1939, he was appointed a staff assistant in A. T. & T.'s Personnel Relations Department and made Secretary of the Telephone Pioneers.

FROM the general to the specific is the step from Mr. Cushing's article to that of EDWARD M. FOLEY, JR.: an account of how the history of one telephone company was prepared. The author last year completed a term as Senior Vice President of the Telephone Pioneers of America, and is now serving as Secretary-Treasurer of Morris F. Tyler Chapter.

Joining the Southern New England Telephone Company in 1909, Mr. Foley began his telephone career by doing part-time clerical work at New Haven while attending high school. In the intervening years he has held various assignments in the Accounting Department. He became statistical supervisor in 1926 and chief accountant in 1937, and since 1941 has been the company's auditor of disbursements.

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